PicoScope® 3000E Series

500 MHz, 5 GS/s, USB powered PC oscilloscopes

Where power and performance meet portability

- 350 MHz or 500 MHz with 5 GS/s
- 10-bit resolution (14 bits using enhanced resolution)
- 2 GS ultra-deep capture memory
- Function/arbitrary waveform generator included
- Compact, portable and USB powered
- 40 serial protocol decoders included as standard
- Segmented memory, persistence and fast waveform updates
- Advanced math, measurements, masks and digital triggering
- PicoScope 7 for Windows®, Mac® & Linux® with free updates
- Support for LabView®, MATLAB® and writing your own code
- 5-year warranty and free technical support

www.picotech.com

Product overview

Once again, Pico is redefining PC-based oscilloscopes with up to 500 MHz bandwidth and 5 GS/s in a compact, portable USB-powered package.

The PicoScope 3000E Series is a range of USB-powered PC oscilloscopes which are small, light, portable and provide high-performance specifications ideal for engineers working on advanced electronics and diverse embedded system technologies, either in the laboratory or on the move.

Supported by the advanced PicoScope 7 Test and Measurement software, the PicoScope 3000E Series enables the rapid cost-effective debug and performance validation of complex analog and power electronic designs. It also offers an ideal package for many other applications including embedded systems design, research, test, education, service and repair.

High bandwidth, high sampling rate, deep memory

With compact size, low cost and input bandwidths up to 500 MHz, there is no compromise on performance. This bandwidth is matched by a real-time sampling rate of up to 5 GS/s, enabling detailed display of high frequency signal detail.

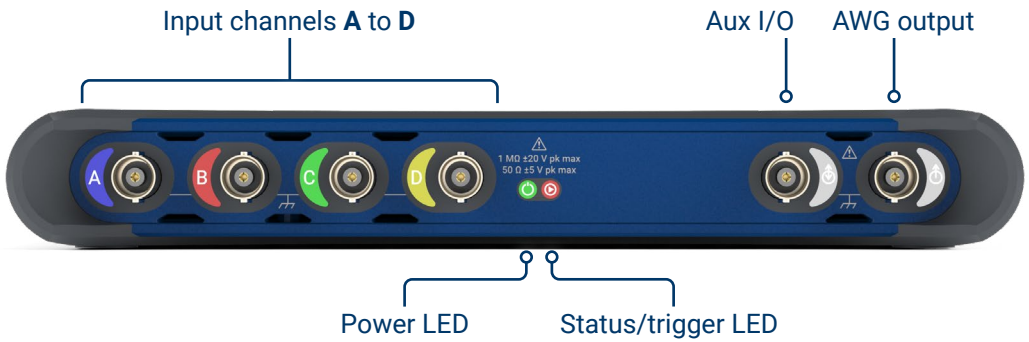
Many other oscilloscopes have high maximum sampling rates, but without deep memory they cannot sustain these rates on long timebases. The PicoScope 3000E Series offers up to 2 GS of capture memory, enabling the 500 MHz PicoScope 3418E to sample at 5 GS/s all the way down to 20 ms/div (200 ms total capture time).

The PicoScope 3000E Series includes a range of powerful tools to make the most of this huge waveform memory. Easy-to-use zoom functions let you zoom and reposition the display by simply dragging with the mouse or touchscreen, while hardware acceleration ensures you see every glitch in huge waveforms regardless of the zoom level.

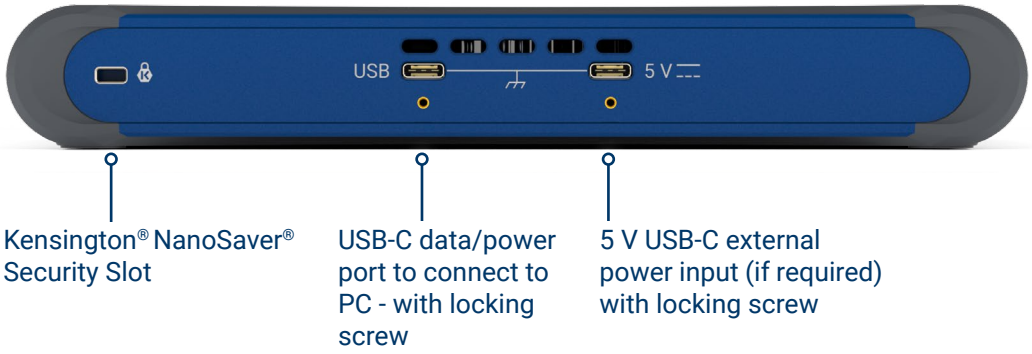
Memory segmentation lets you capture thousands of waveforms in quick succession and view them in the waveform buffer navigator, filtering them using criteria such as mask limit testing or measurement limits to drill down to the waveforms you need to see. More advanced tools such as serial decoding and DeepMeasure™ work to analyze data packets or events across all waveform buffers in the deep memory, making the PicoScope 3000E Series some of the most capable oscilloscopes on the market.

PicoScope 3000E Series inputs, outputs and indicators

Front panel

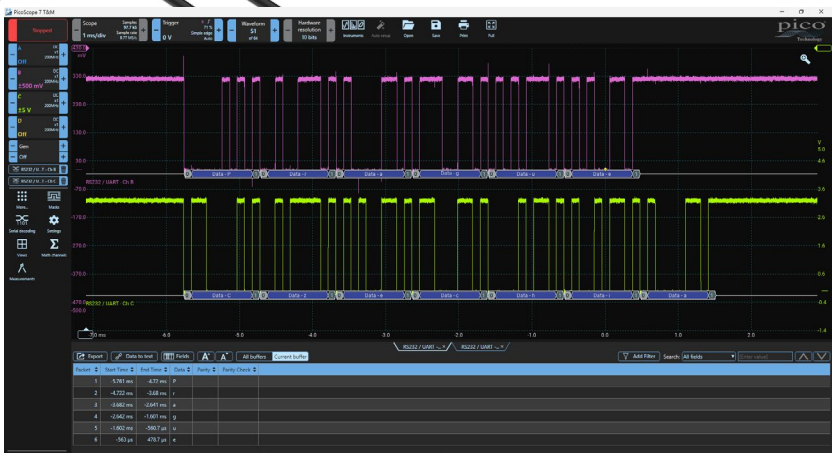


Rear panel



Channel trace color indicators

The colored indicators next to each BNC input channel automatically adapt when you customize trace colors displayed on the screen — aiding channel identification for error-free waveform interpretation.



SuperSpeed® USB-C® connection

PicoScope 3000E Series instruments feature USB-C sockets for both the connection to the host PC and for an external power adaptor (should it be required). USB-C provides lightning-fast saving of waveforms while retaining compatibility with older USB standards, with an included USB-A to C adaptor cable.

PicoSDK® supports continuous USB streaming to the host computer at rates of over 300 MS/s.

The USB connection not only allows high-speed data acquisition and transfer, but also makes printing, copying, saving and emailing your data from the field quick and easy.

Signal fidelity and quality

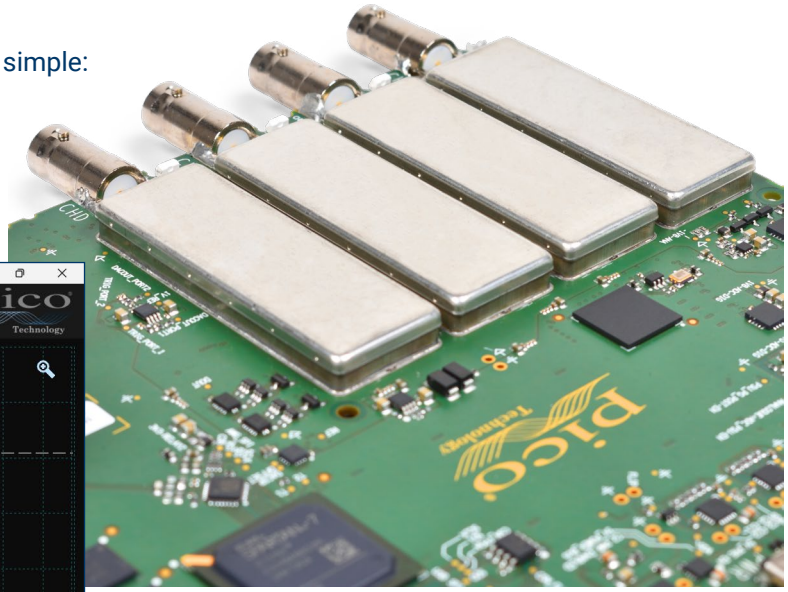
Most oscilloscopes are built down to a price. PicoScopes are built up to a specification. Careful front-end design and shielding reduces noise, crosstalk and harmonic distortion.

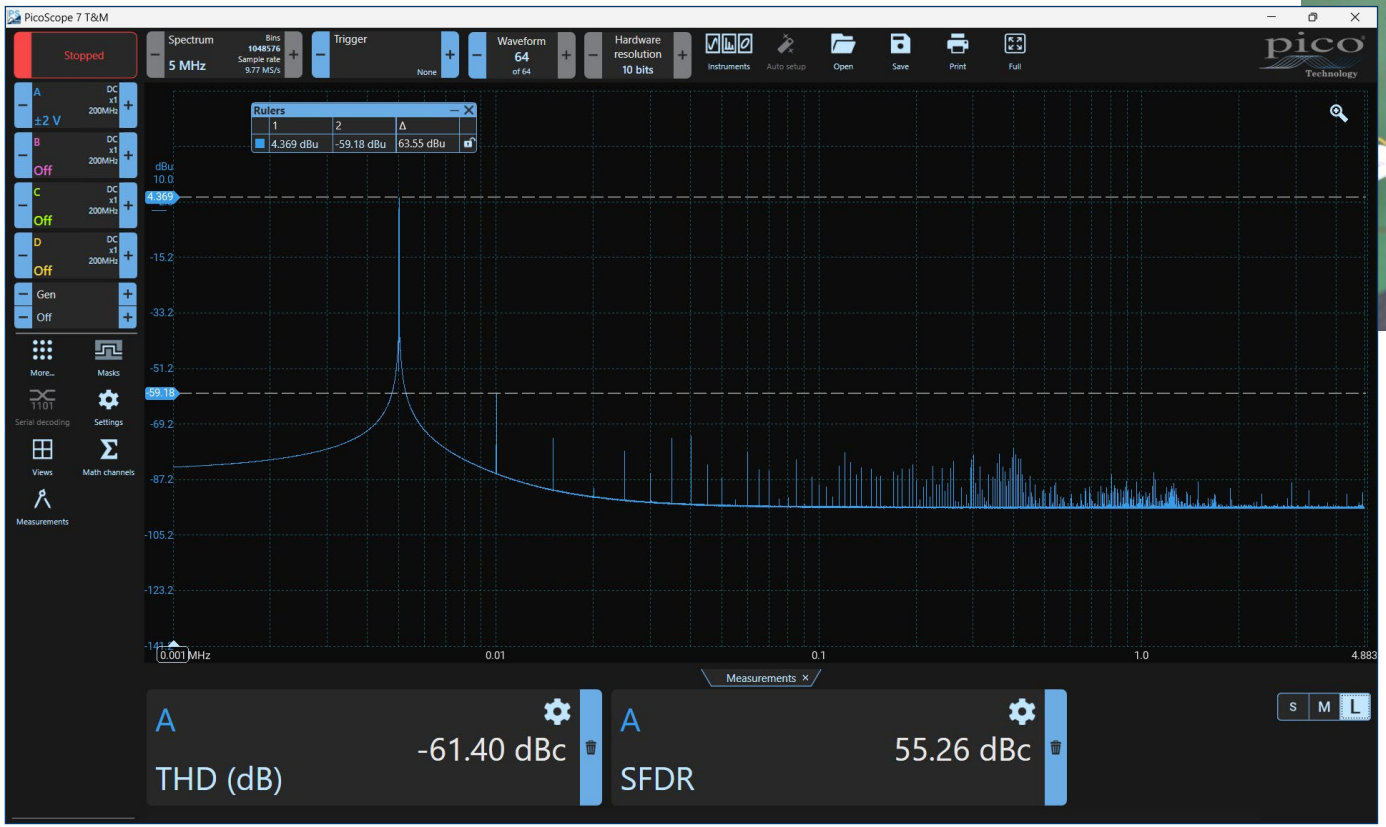
Years of oscilloscope design experience can be seen in the PicoScope 3000E Series with improved bandwidth flatness, 50 dBc SFDR, low distortion and a typical channel-to-channel isolation ratio better then 500:1 at full bandwidth. This represents a notable improvement over other oscilloscope manufacturers, who can't match these specifications, or often resort to not publishing them at all.

To ensure precision, high accuracy and repeatability, all processing of sampled data — both on-board the PicoScope 3000E and in software — is carried out with at least 16 bits resolution regardless of the ADC resolution mode in use. This means that when using functions like math channels, interpolation, filtering or resolution enhancement, you can really see the extra detail revealed in your signal.

We are proud of the dynamic performance of our products, and publish our specifications in detail. The result is simple: when you probe a circuit, you can trust in the waveform you see on the screen.

The PicoScope 3000E Series: unique performance and a 5-year warranty!



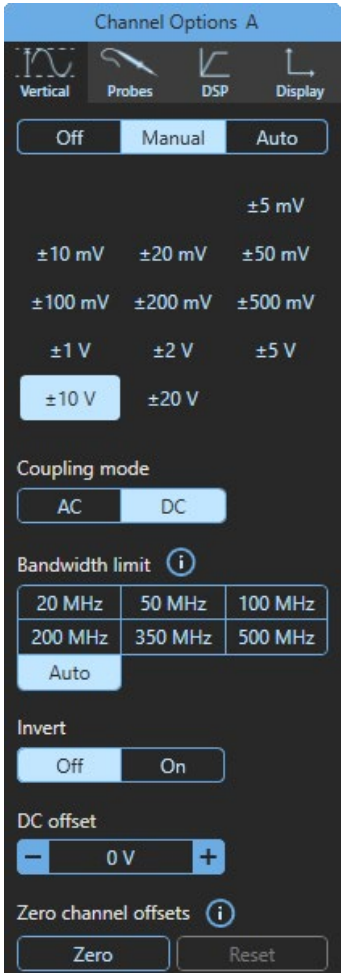


High resolution for low-level signals

With their 8- to 14-bit resolution (with resolution enhance), the PicoScope 3000E can display low-level signals at high zoom factors. This allows you to view and measure features such as noise and ripple superimposed on larger DC or low-frequency voltages, as shown in the image. It shows a 100 kHz sine wave injected onto a 1 kHz square wave, with 14-bit resolution enhance. Although the ripple is riding on a signal that is fifty times its size, the high resolution and deep memory of the PicoScope 3000E allow you to zoom in to see, and measure, every detail.

Powerful software filters (low/high and bandpass/stop) and resolution enhance can be used to further reveal signal details. For example, a combination of 10-bit mode and 20 MHz filter allows very small signals to be viewed.

The PicoScope 3000E Series not only has a much wider set of filters than other scopes, but they're also more effective — they include both analog and digital components. This means that noise from the whole signal chain including the ADC is attenuated.

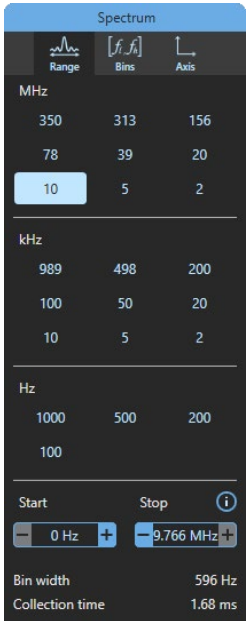


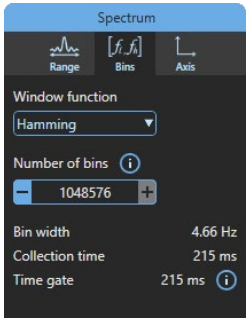
100 kHz ripple on a 1 kHz square wave, with 14-bit resolution enhance

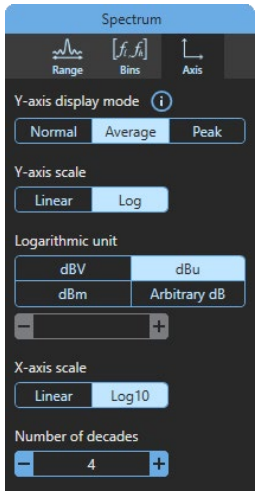
FFT spectrum analyzer

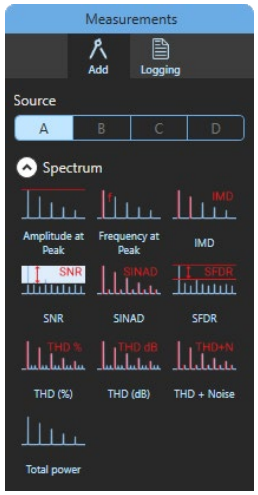
The spectrum view plots amplitude against frequency and is ideal for finding noise, crosstalk or distortion in signals. The spectrum analyzer in PicoScope is of the Fast Fourier Transform (FFT) type which, unlike a traditional swept spectrum analyzer, can display the spectrum of a single, non-repeating waveform. With up to a million points, PicoScope's FFT has excellent frequency resolution and a low noise floor.

With a click of a button, you can display a spectrum plot of the active channels, with a maximum frequency up to the bandwidth of your scope. You can display multiple spectrum views alongside oscilloscope views of the same data. A comprehensive set of automatic frequency-domain measurements can be added to the display, including THD, THD+N, SNR, SINAD and IMD. A mask limit test can be applied to a spectrum and you can even use the AWG and spectrum mode together to perform swept scalar network analysis.

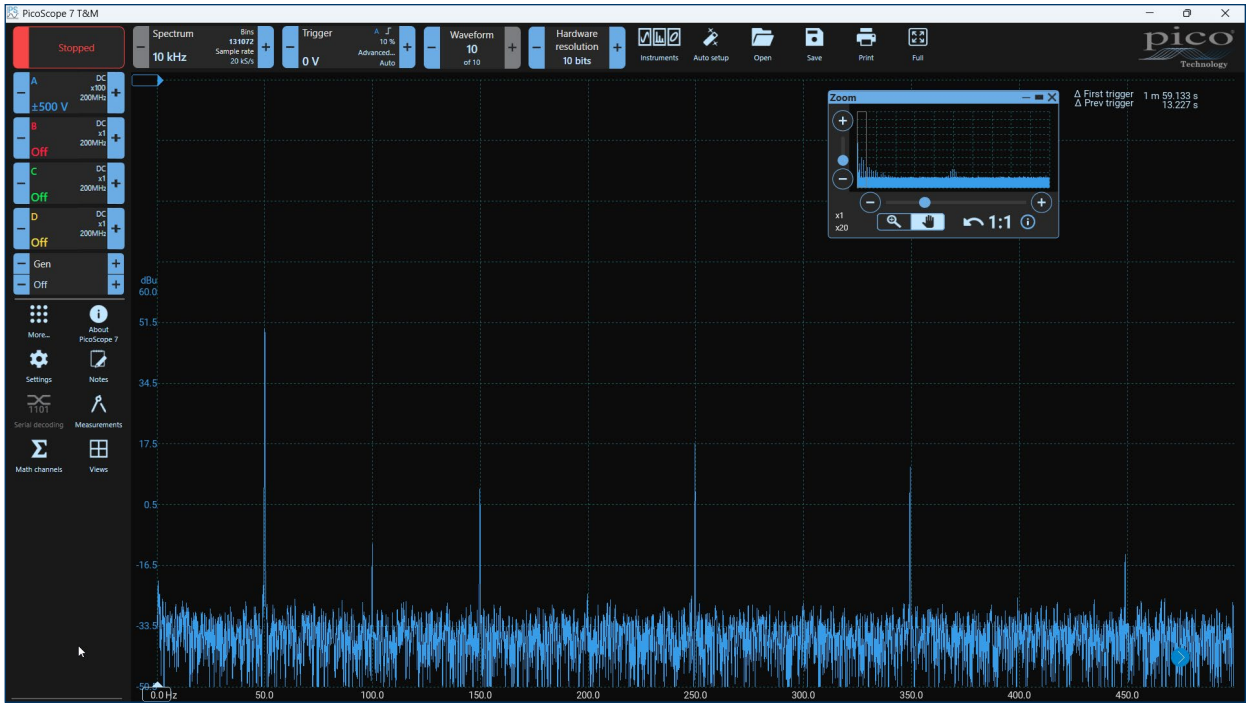








A full range of settings gives you control over the number of spectrum bands (FFT bins), scaling (including log/log) and display modes (instantaneous, average, or peak-hold). A selection of window functions allow you to optimize for selectivity, accuracy or dynamic range.

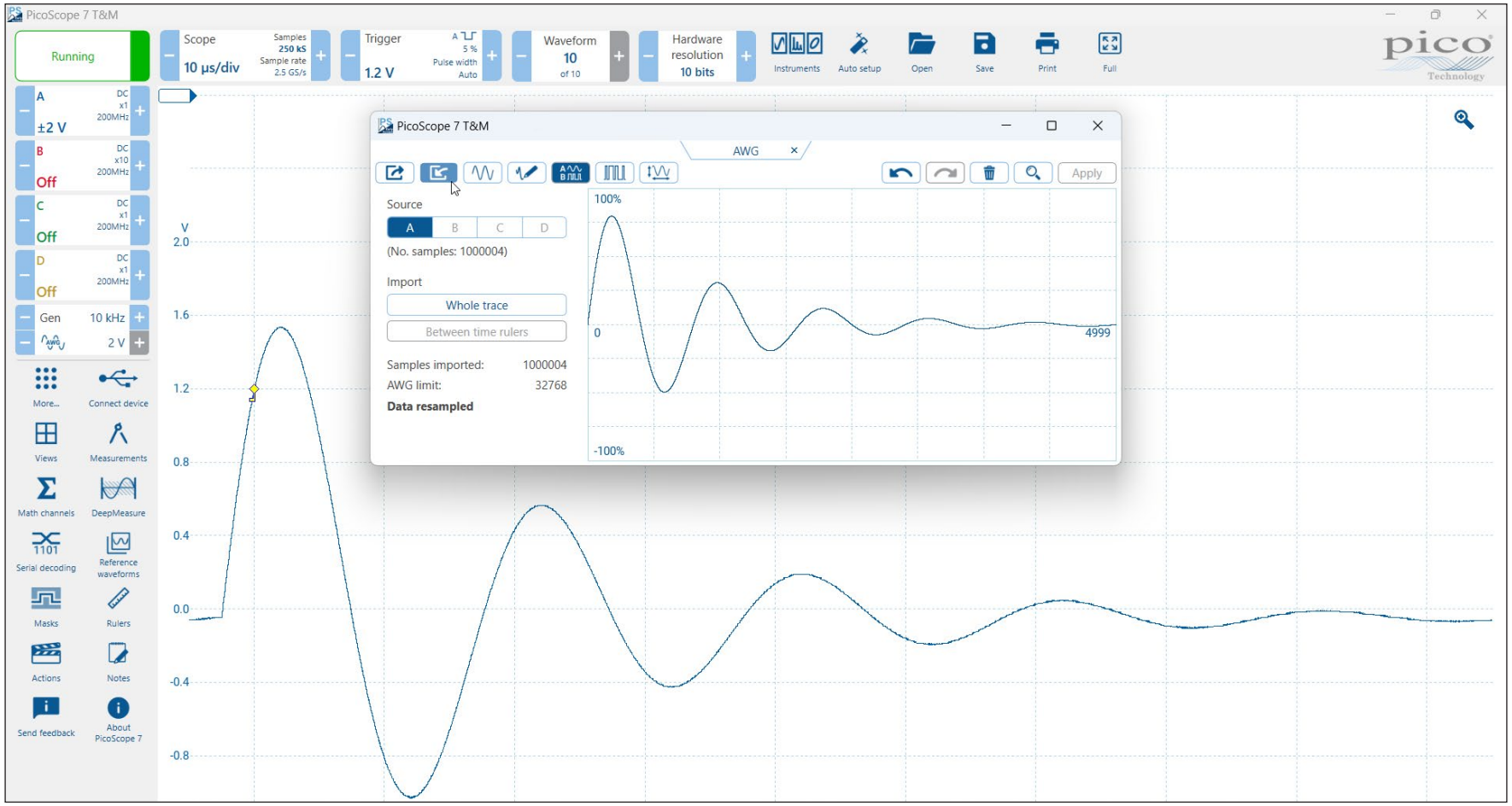


Arbitrary waveform and function generator

All PicoScope 3000E models have a built-in function generator covering the frequency range from 100 µHz to 20 MHz. As well as basic controls to set level, offset and frequency, more advanced controls allow you to sweep over a range of frequencies. Combined with the spectrum peak-hold option, this makes a powerful tool for testing amplifier and filter responses.

Trigger tools allow one or more cycles of a waveform to be output when various conditions are met, such as the scope triggering, a trigger event on the aux input, or a mask limit test failing.

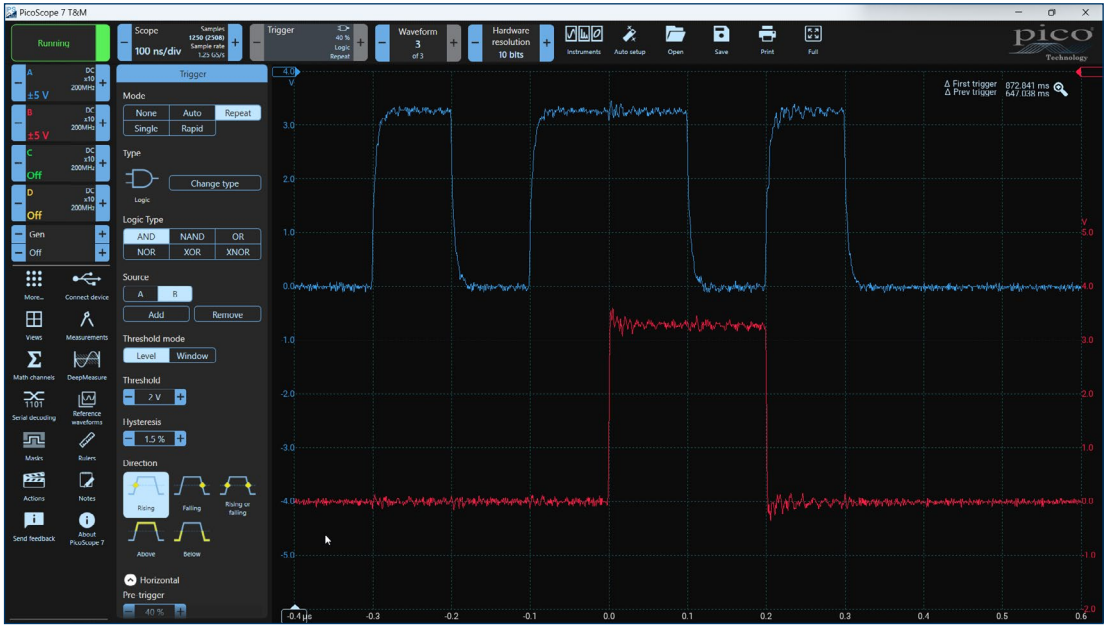
All models also include a 14-bit 200 MS/s arbitrary waveform generator (AWG). AWG waveforms can be created or edited using the built-in editor, imported from oscilloscope traces, loaded from a spreadsheet or exported to a CSV file.



Digital triggering architecture

Many digital oscilloscopes still use a trigger architecture based on analog comparators. This causes time and amplitude errors that cannot always be calibrated out and often limits the trigger sensitivity at high bandwidths.

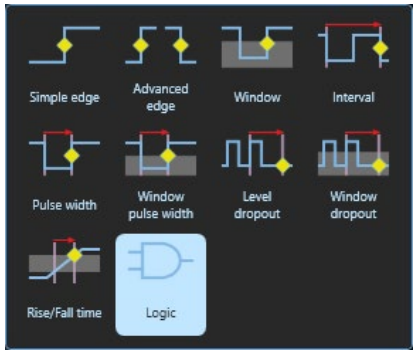
In 1991 Pico pioneered the use of fully digital triggering using the actual digitized data. This technique reduces trigger errors and allows our oscilloscopes to trigger on the smallest signals, even at the full bandwidth. Trigger levels and hysteresis can be set with high precision and resolution.



Advanced triggers

The PicoScope 3000E Series offers a set of advanced trigger types including pulse width, runt pulse, windowed, rise/fall time, logic and dropout.

The logic trigger function also allows you to trigger on combinations of edge or window triggers on any of the analog inputs, for example to trigger on edges on channel A only when channel B is also high, or to trigger when any of the four channels goes outside a specified voltage range.



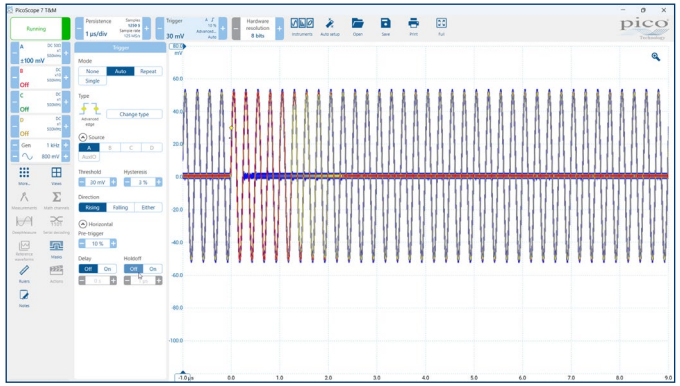
Trigger holdoff

Trigger holdoff is an adjustment to set the delay period after a triggered acquisition, during which the oscilloscope cannot trigger again.

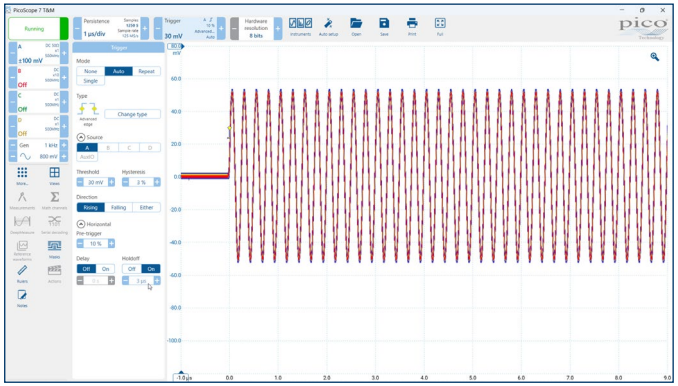
Complex waveforms can be difficult to reliably and repeatably trigger on. For example, when looking at a burst of pulses, the standard edge trigger might fire on any rising edge within the burst. This results in a flickering display of overlaid waveforms that are difficult to view and not meaningful in terms of the behavior of the device under test.

Trigger holdoff allows you to set a period when the scope won't look for further trigger events after each triggered acquisition, effectively extending the oscilloscope dead time between acquisitions. By increasing the holdoff time to greater than the length of the pulse train, you can ensure that the oscilloscope triggers correctly each time as shown below:

Without trigger holdoff, the oscilloscope falsely triggers on downstream pulses in the burst.



With trigger holdoff set appropriately, the oscilloscope triggers correctly on only the first pulse in the burst.



Persistence mode

PicoScope's persistence mode options allow you to see old and new data superimposed, making it easy to spot glitches and dropouts and estimate their relative frequency – useful for displaying and interpreting complex analog signals such as video waveforms and amplitude modulated signals. Color-coding and intensity-grading show which areas are stable and which are intermittent. Choose between **Fast**, **Time** or **Frequency Persistence** types and customizations within each.

An important specification to understand when evaluating oscilloscope performance, especially in persistence mode, is the waveform update rate, which is expressed as waveforms per second. While the sampling rate indicates how frequently the oscilloscope samples the input signal within one waveform or cycle, the waveform update rate refers to how quickly an oscilloscope acquires waveforms.

Oscilloscopes with high waveform update rates provide better visual insight into signal behavior and dramatically increase the probability that the oscilloscope will quickly capture transient anomalies such as jitter, runt pulses and glitches – that you may not even know exist.

The PicoScope 3000E Series' HAL4 hardware acceleration can achieve update rates of 300 000 waveforms per second in fast persistence mode.

Ultra-deep memory

PicoScope 3000E Series oscilloscopes have waveform capture memories of up to 2 gigasamples – many times larger than competing scopes. Deep memory enables the capture of long-duration waveforms at maximum sampling speed. In fact, the PicoScope 3000E Series can capture waveforms 200 ms long with 200 ps resolution.

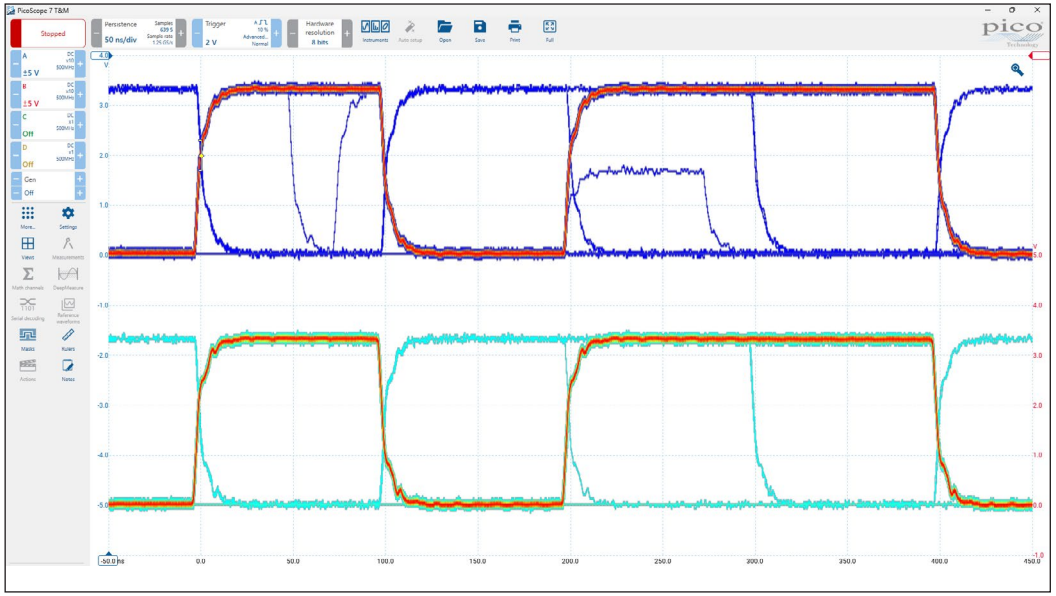
Deep memory is invaluable when you need to capture fast serial data with long gaps between packets, or nanosecond laser pulses spaced milliseconds apart, for example.

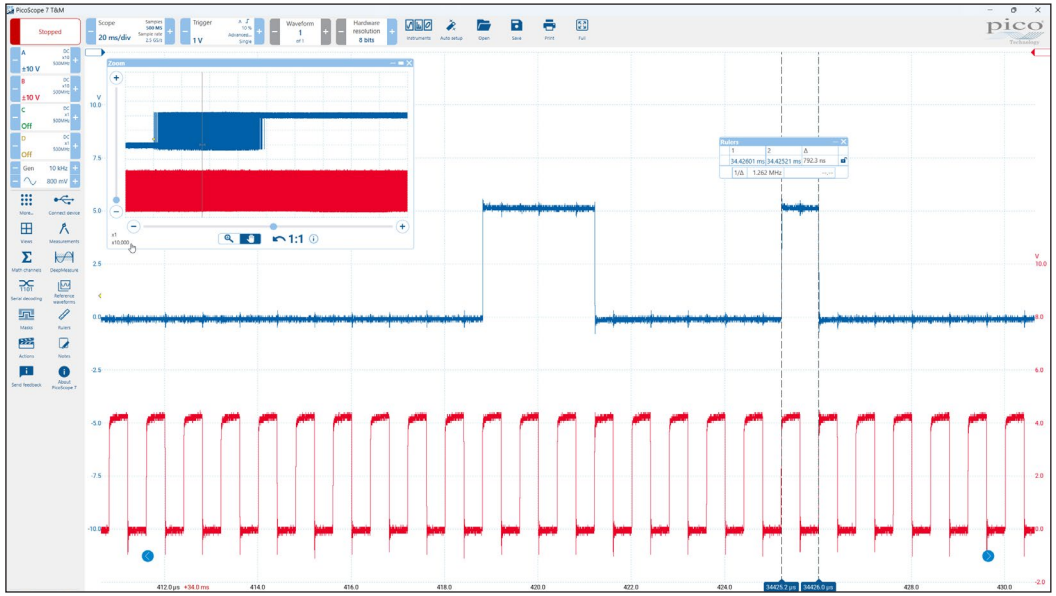
It can be useful in other ways too: PicoScope lets you divide the capture memory into a number of segments, up to 40 000. You can set up a trigger condition to store a separate capture in each segment, with as little as 700 ns dead time between captures.

In rapid trigger mode, it is possible to capture 40 000 waveforms in 20 ms, which is an effective capture rate of 2 million waveforms per second.

Once you have acquired the data, you can step through the memory one segment at a time until you find the event you are looking for.

Powerful tools are included to allow you to manage and examine all of this data. As well as functions such as mask limit testing and color persistence mode, PicoScope software enables you to zoom into your waveform up to 100 million times. The **Zoom** window allows you to easily control the size and location of the zoom area. Other tools, such as the waveform buffer, serial decoding and hardware acceleration work with the deep memory, making the PicoScope 3000E Series a powerful, compact package.





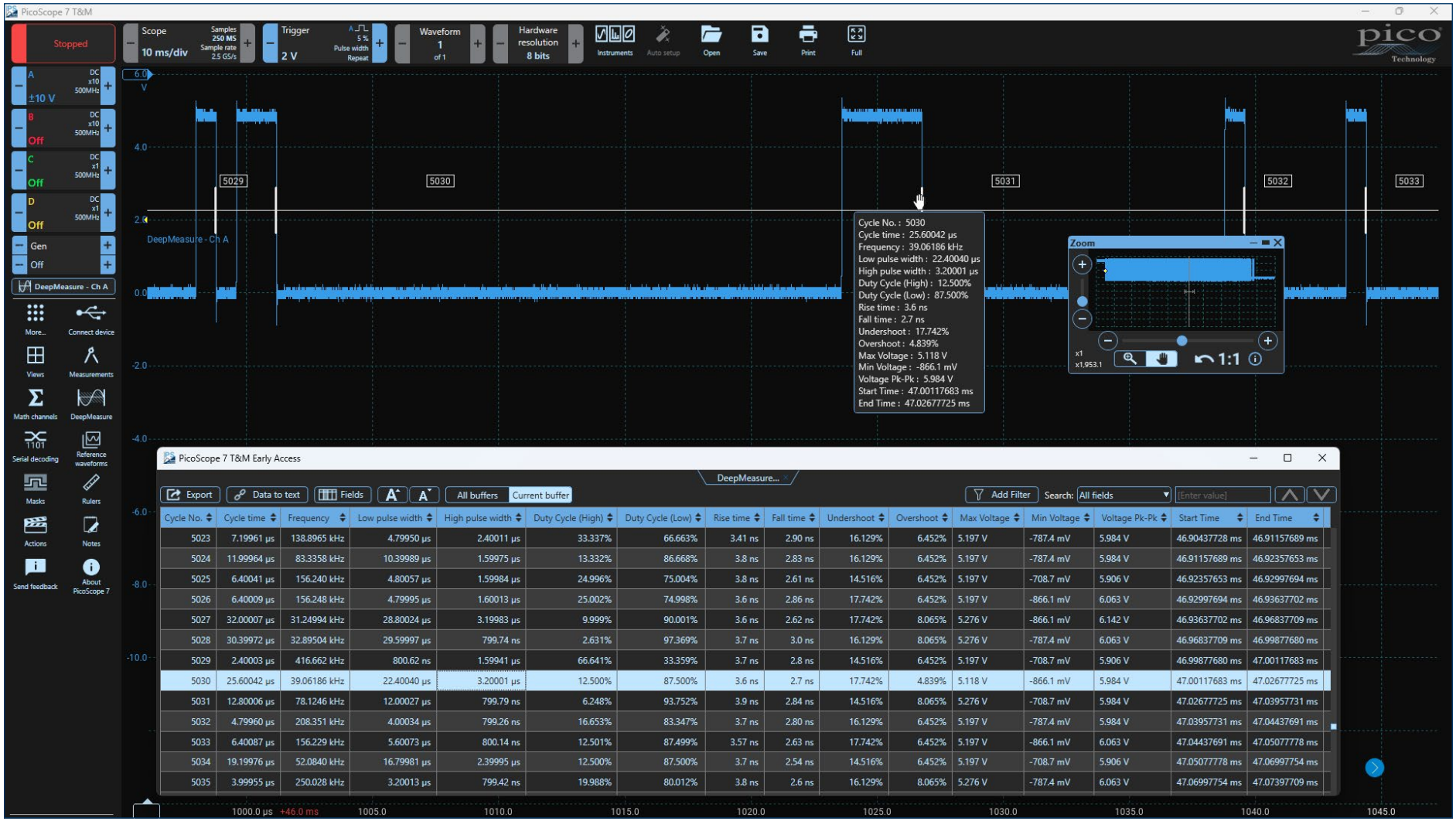
DeepMeasure

One waveform, millions of measurements.

Measurement of waveform pulses and cycles is key to verification of the performance of electrical and electronic devices.

DeepMeasure delivers automatic measurements of important waveform parameters, such as pulse width, rise time and voltage, for every individual cycle in the captured waveforms. Up to a million cycles can be displayed with each triggered acquisition or combined across multiple acquisitions. Results can be easily sorted, analyzed and correlated with the waveform display, or exported as a .CSV file or spreadsheet for further analysis.

For example, use DeepMeasure to capture 40 000 pulses and quickly find those with the largest or smallest amplitude, or use your scope's deep memory to record a million cycles of one waveform and export the rise time of every single edge for statistical analysis.



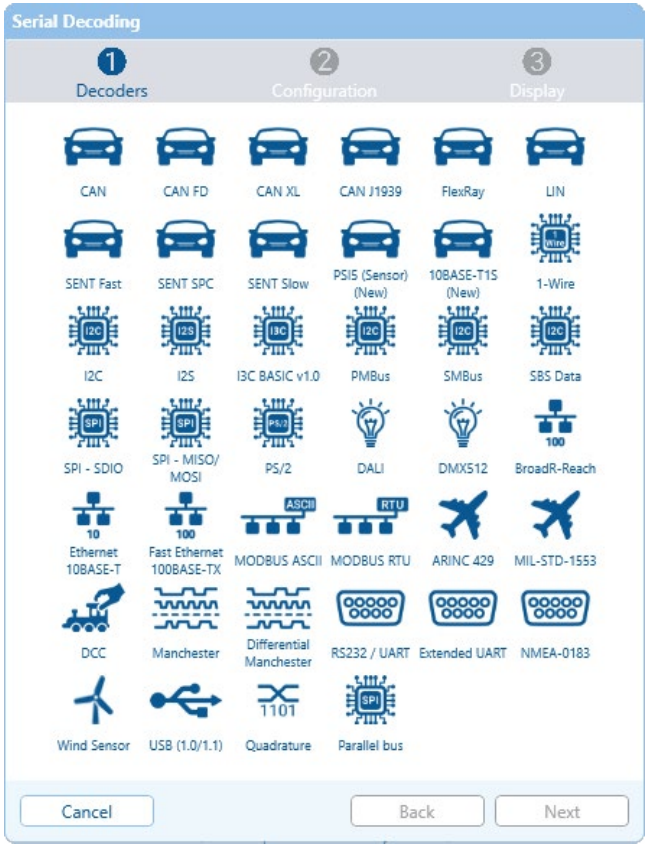
Serial bus decoding and protocol analysis

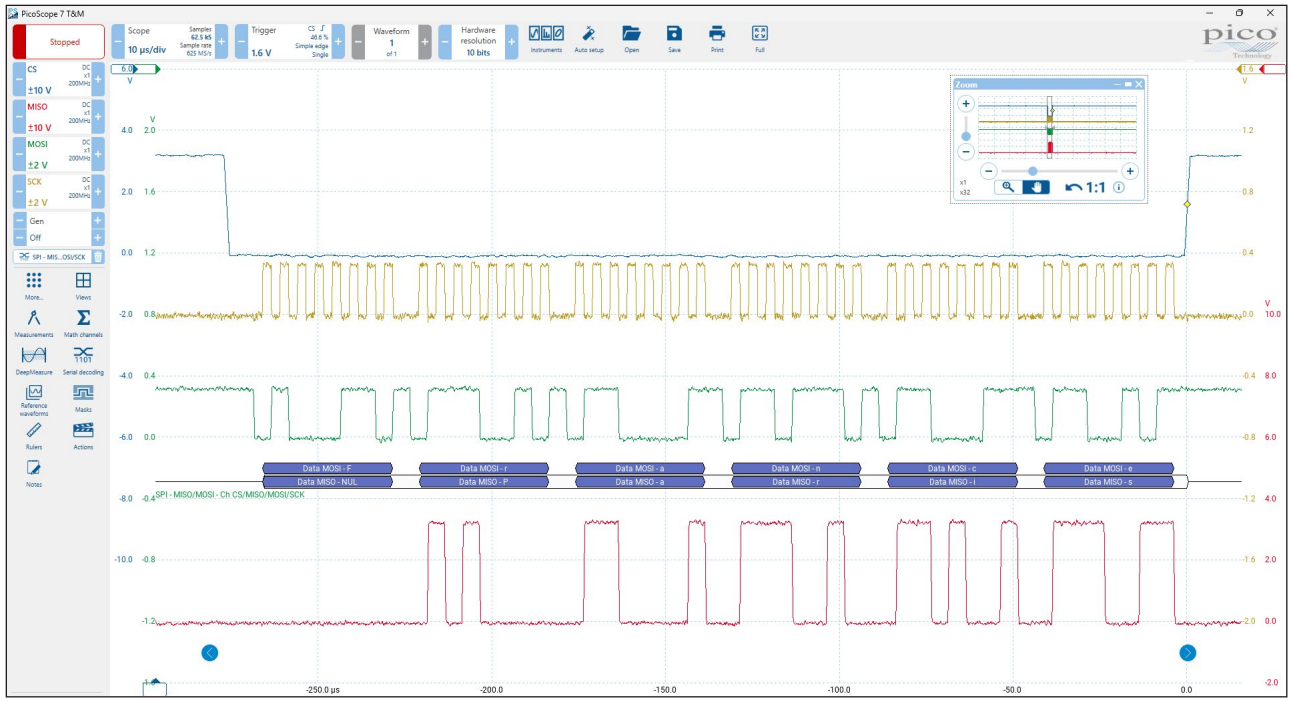
PicoScope can decode 1-Wire, 10BASE-T1S, ARINC 429, BroadRReach, CAN, CAN FD, CAN J1939, CAN XL, DALI, DCC, Differential Manchester, DMX512, Ethernet 10BASE-T, Extended UART, Fast Ethernet 100BASE-TX, FlexRay, I2C, I2S, I3C BASIC v1.0, LIN, Manchester, MIL-STD-1553, MODBUS ASCII, MODBUS RTU, NMEA-0183, Parallel Bus, PMBus, PS/2, PSI5 (Sensor), Quadrature, RS232/UART, SBS Data, SENT Fast, SENT Slow, SENT SPC, SMBus, SPI-MISO/MOSI, SPI-SDIO, USB (1.0/1.1) and Wind Sensor protocol data as standard, with more protocols in development and available in the future, with free-of-charge software upgrades.

Graph format shows the decoded data (in hex, binary, decimal or ASCII) in a data-bus timing format beneath the waveform on a common time axis, with error frames marked in red. These frames can be zoomed to investigate noise or signal integrity issues.

Table format shows a list of the decoded frames, including the data and all flags and identifiers. You can set up filtering conditions to display only the frames you are interested in or search for frames with specified properties. The statistics option reveals more detail about the physical layer such as frame times and voltage levels. Click on a frame in the table to zoom the oscilloscope display and show the waveform for that frame.

PicoScope can also import a "Link File" spreadsheet to decode the data into user-defined text strings. This helps to speed analysis by cross referencing hexadecimal field values into human readable form. So, for example, instead of displaying “Address: 7E” in the Table View, the corresponding text "Set Motor Speed" will be shown instead, or whatever is appropriate. The Link File template with all field headings can be created directly from the serial table toolbar and edited manually as a spreadsheet to apply the cross-reference values.





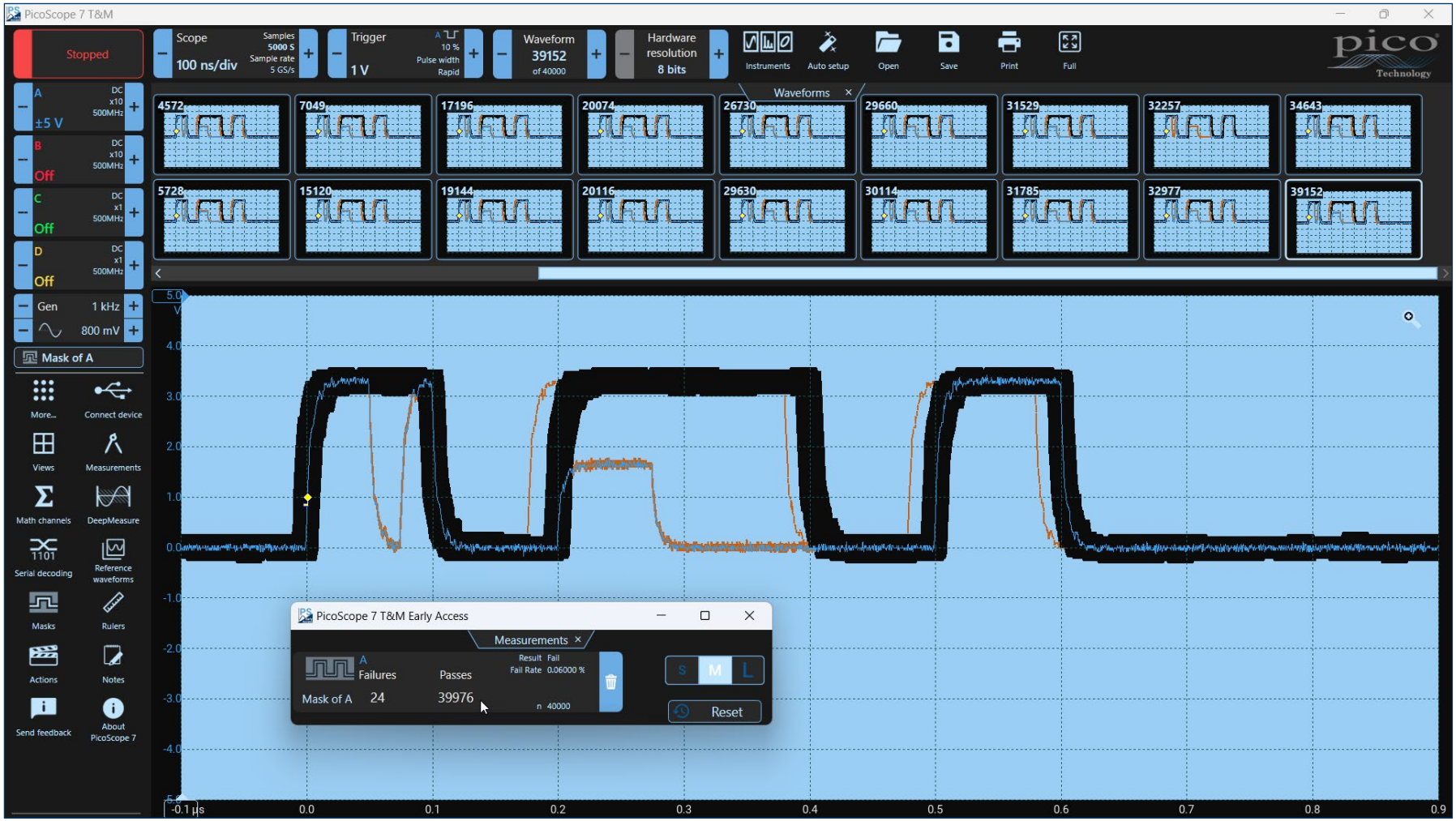
Mask limit testing

Mask limit testing allows you to compare live signals against known good signals, and is designed for production and debugging environments. Simply capture a known good signal and use it to auto-generate a mask and then measure the system under test. PicoScope will check for mask violations and perform pass/fail testing, capture intermittent glitches and can show a failure count and other statistics in the Measurements window. Masks can be saved in a library for future use, and exported/imported to share with other PicoScope users.

Waveform buffer and navigator

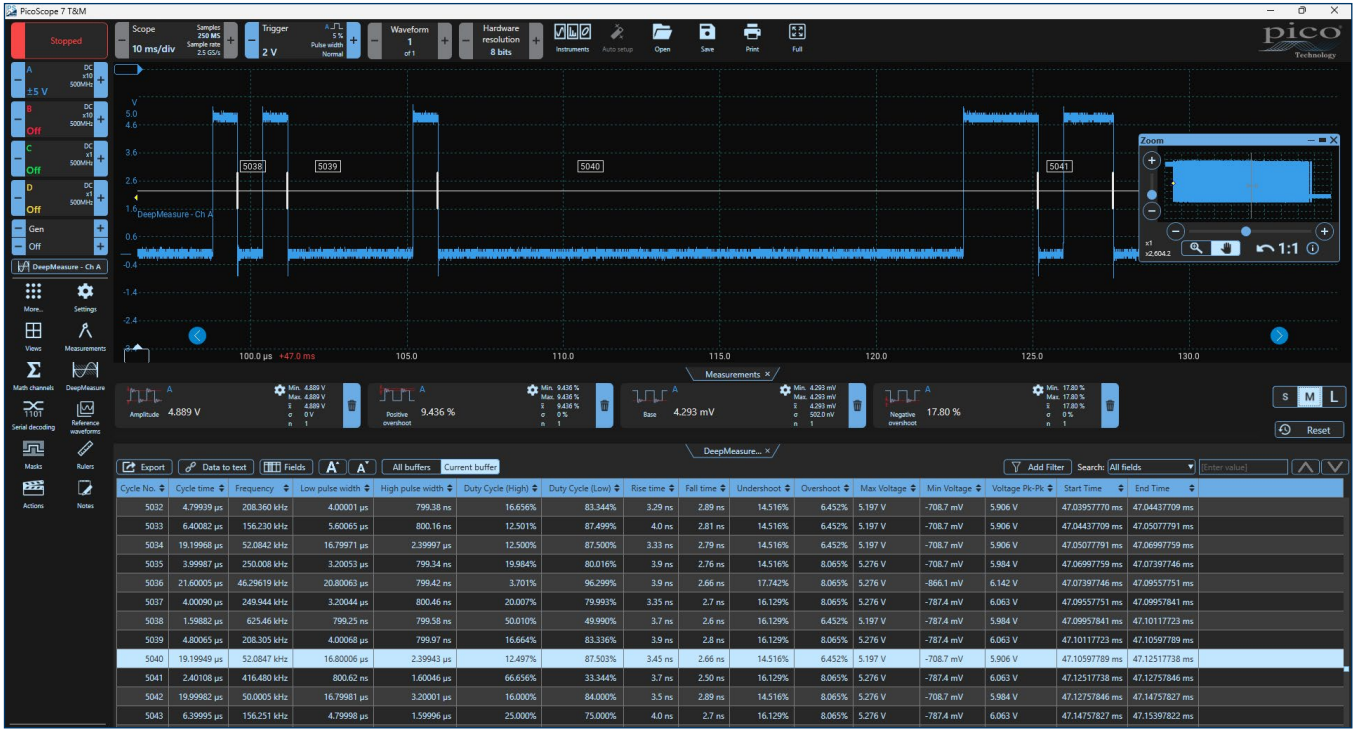
Ever spotted a glitch on a waveform, but by the time you've stopped the scope it has gone? With PicoScope you don't need to worry about missing glitches or other transient events. PicoScope can store the last 40 000 oscilloscope or spectrum waveforms in its circular waveform buffer.

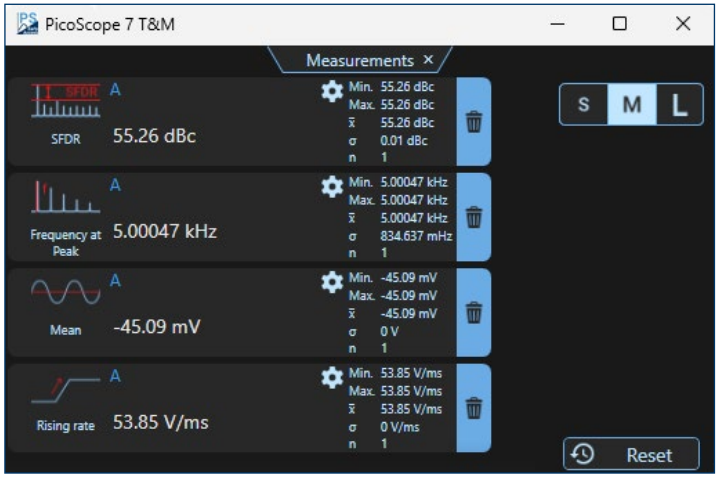
The buffer navigator provides an efficient way of navigating and searching through waveforms, effectively letting you turn back time. Tools such as mask limit testing can also be used to scan through each waveform in the buffer looking for mask violations.



Measurements: introduction

PicoScope 7 provides many built-in, pre-defined measurements that can be applied to waveforms displayed on the graph. If the DUT waveform characteristics change over time, the measurements track and display current results based on the live waveform. Statistics can be displayed to show Average, Mean, Maximum, Minimum and Standard Deviation values for the duration of a test.



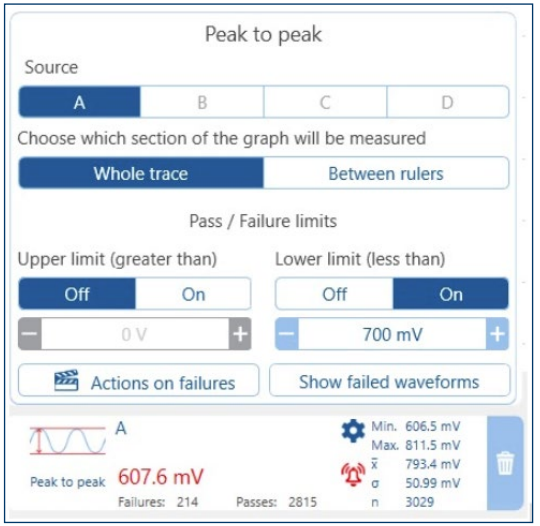


Measurements: pass/failure limits

PicoScope software offers pass/failure limits for any measurement. This gives a visual indication within the measurement window whenever the measurement result goes above or below a specified value.

Pass/failure limits can be combined with Actions to immediately alert the user or execute other actions when a measurement threshold has been exceeded, either above or below set limits.

By filtering the waveform buffer to show only those waveforms failing a measurement limit, you can quickly identify points of interest out of the thousands of waveforms captured in the deep memory of your PicoScope.

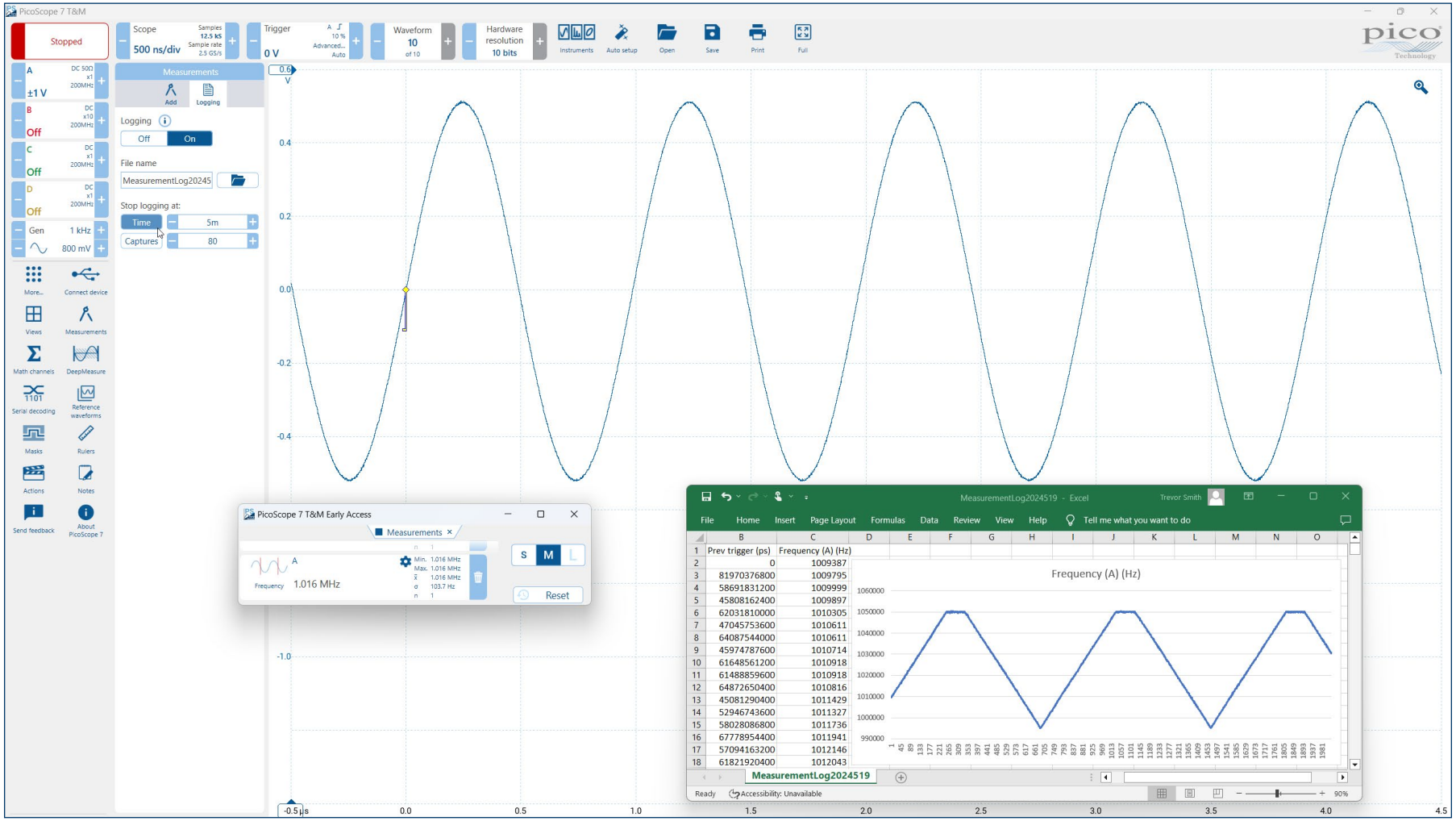


Measurements: logging

PicoScope allows results of measurements to be recorded to a file for later analysis. The resulting log can be used to characterize the performance of a circuit over medium or long-duration tests – such as when evaluating drift due to thermal and other effects, or can be used to check functionality against an externally controlled variable such as supply voltage.

The maximum number of rows recorded is limited by the user-set constraints or disk capacity.

Read more about Measurements.

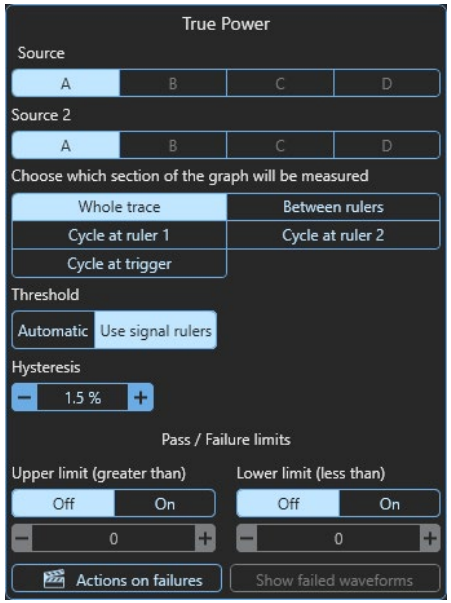


Measurements: Power

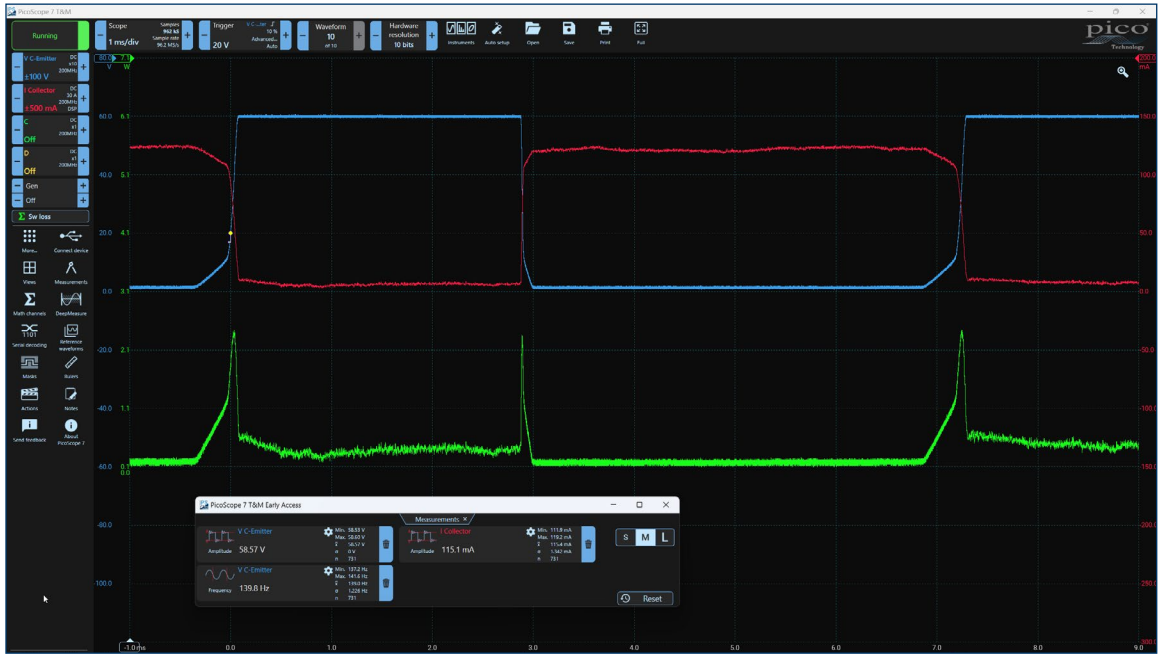
PicoScope software offers a suite of power measurements (with more in development) and associated power math channels which include:

- True power
- Reactive power
- Apparent power
- Power factor

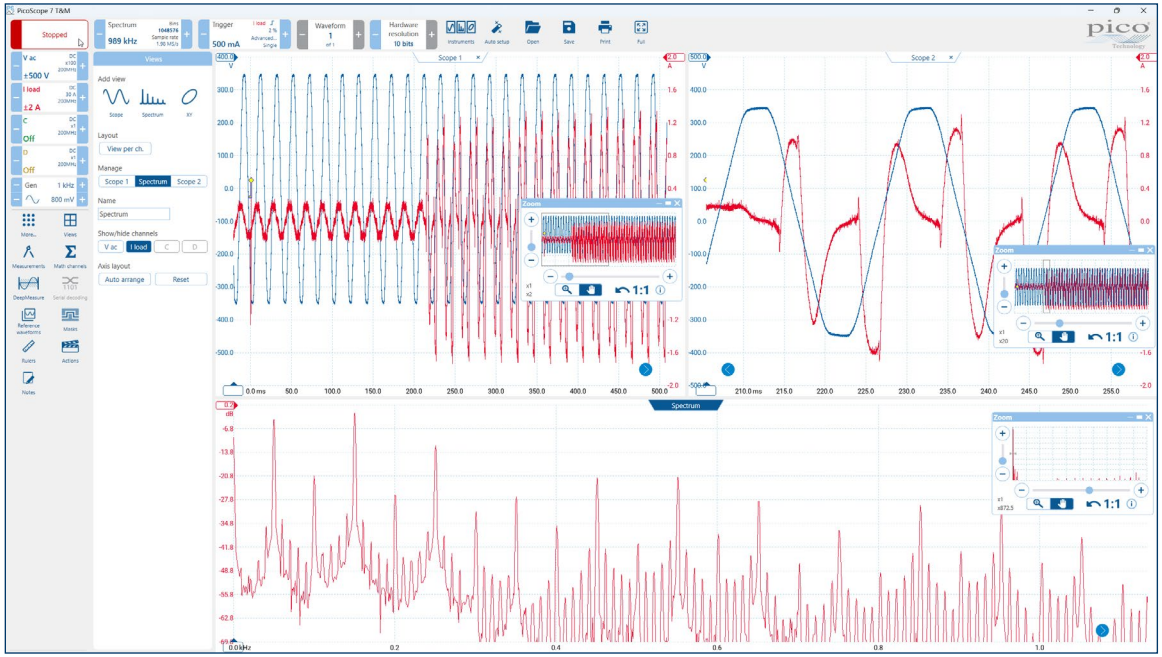
With PicoScope you can graph your power measurements using math channels or display continuous values or statistics on screen using the measurements option.



Power measurement set-up screen



IGBT (insulated-gate bipolar transistor) switching-loss measurements



Inductive load power-up sequence

Actions

PicoScope can be programmed to execute actions when certain events occur.

Events that can trigger an action include measurement and mask limit failures, trigger events and buffers full.

The actions that PicoScope can execute include:

- Stop the capture
- Save waveform to disk in your choice of format including .csv, .png and .matlab
- Play a sound
- Trigger signal generator or AWG
- Run an external application or script
- Export serial-decoded data to a file on disk

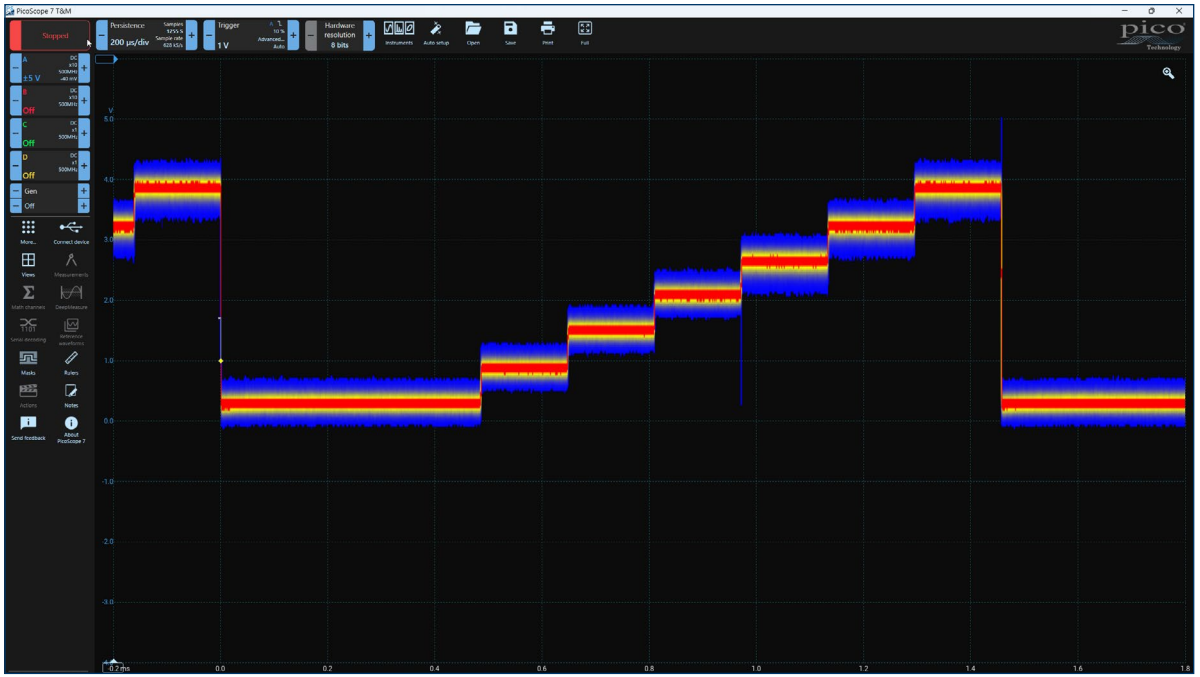
Actions, coupled with mask limit testing, help create a powerful and time-saving waveform monitoring tool. Capture a known good signal, auto-generate a mask around it and then use the actions to automatically save any waveform (complete with a time/date stamp) that does not meet specification.

Hardware acceleration engine (HAL4)

Some oscilloscopes struggle when you enable deep memory; the screen update rate slows and the controls become unresponsive. The PicoScope 3000E Series avoids this limitation with the use of a dedicated fourth-generation hardware acceleration (HAL4) engine inside the oscilloscope.

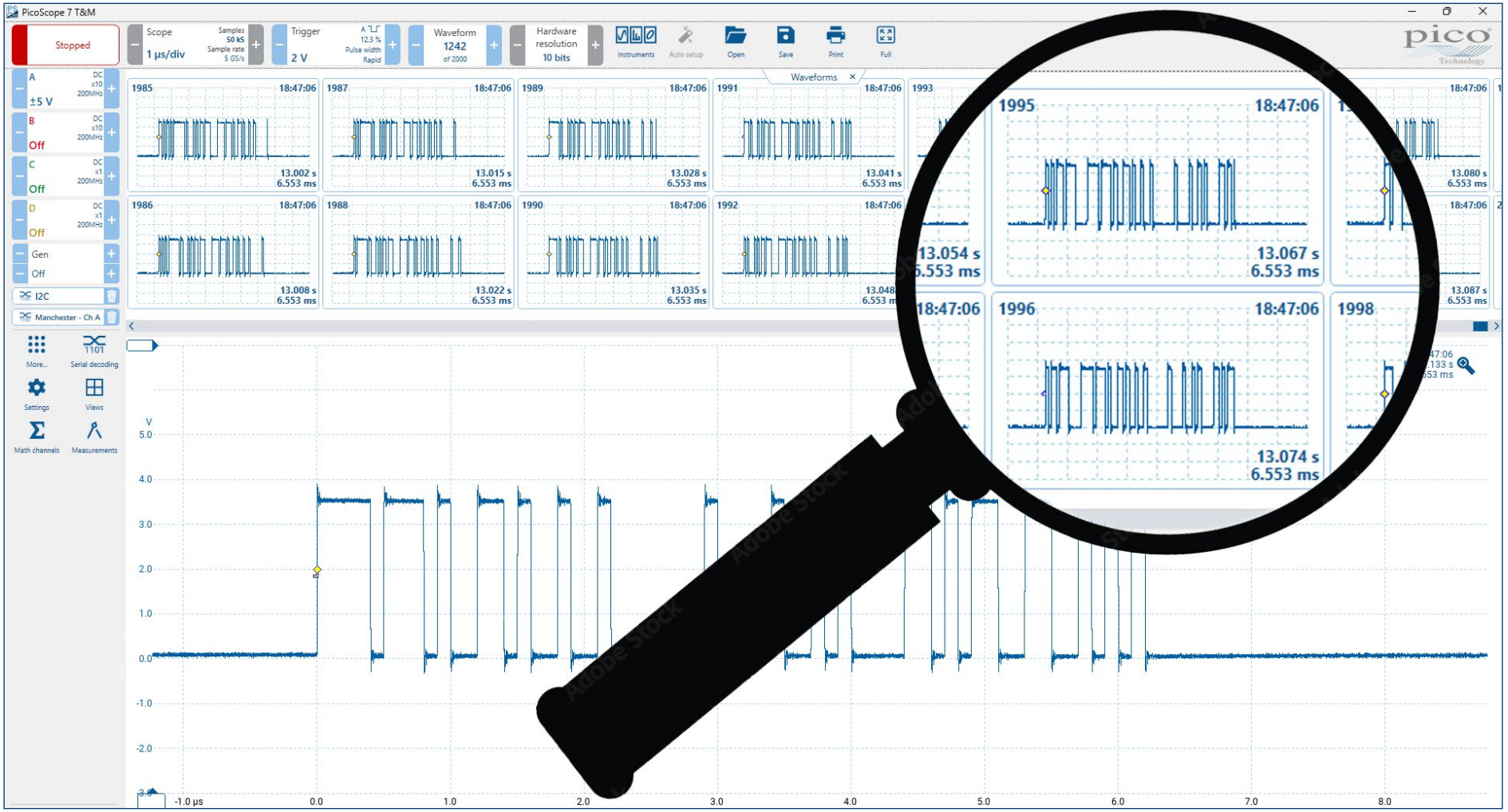
Its massively parallel design effectively creates the waveform image to be displayed on the PC screen and allows the continuous capture and display to the screen of up to 2 billion samples every second.

The hardware acceleration engine eliminates any concerns about the USB connection or PC processor performance being a bottleneck.



Time-stamping

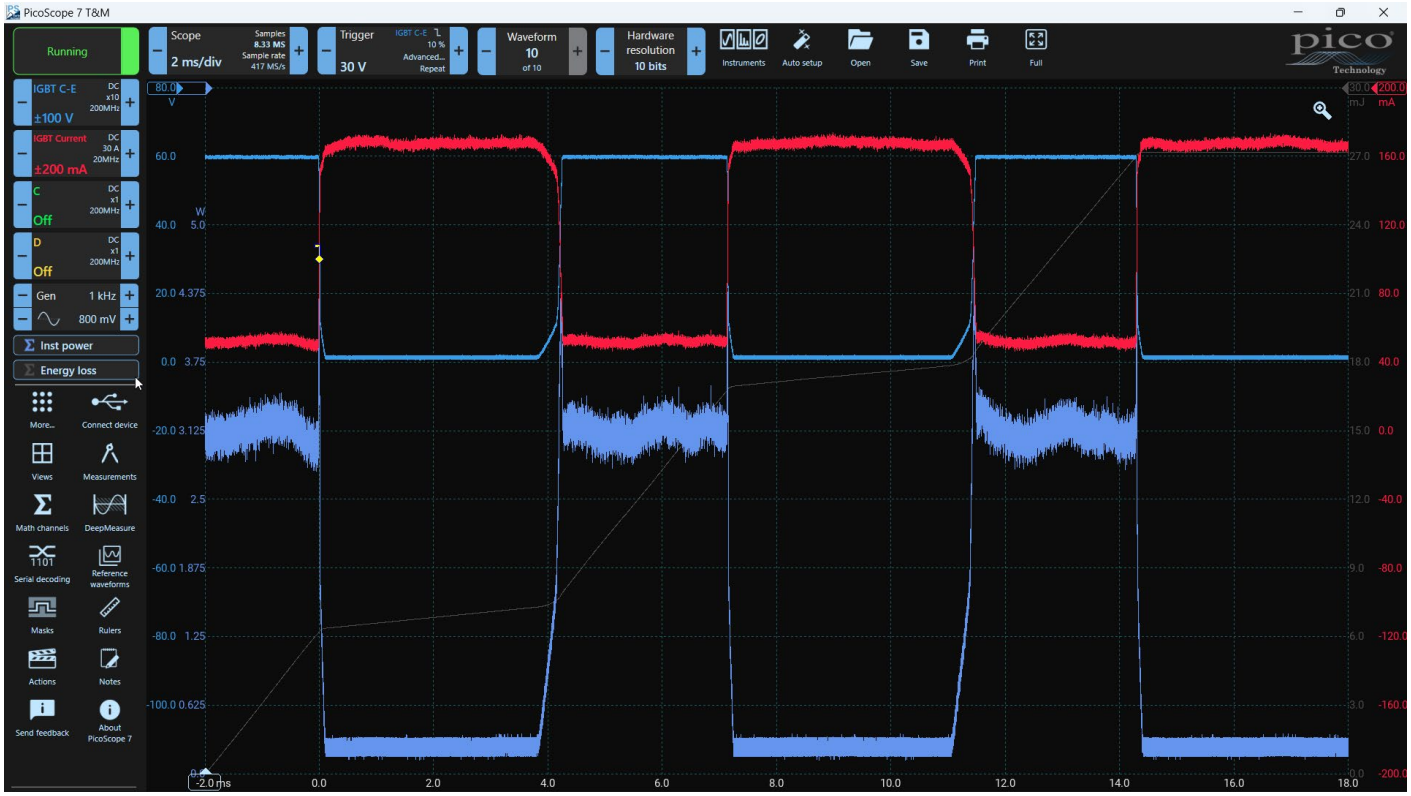
The PicoScope 3000E Series features hardware-based trigger time-stamping. Each waveform can be time-stamped with the time in sample intervals from the previous waveform. Rapid trigger rearm times are possible down to < 700 ns (typical).

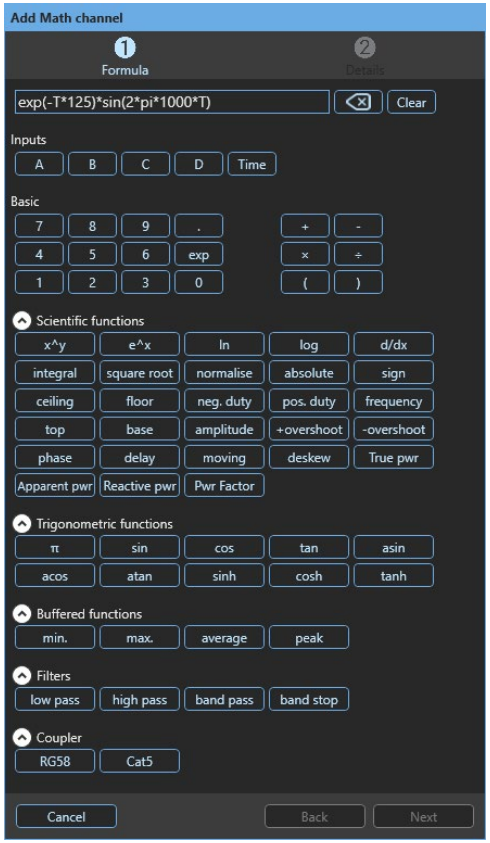


Math channels and filters

PicoScope math channels outperform the competition. You can select simple functions such as addition and inversion, or open the equation editor to create complex functions involving filters (lowpass, highpass, bandpass and bandstop filters), trigonometry, exponentials, logarithms, statistics, integrals and derivatives.

Display up to eight real or calculated channels in each scope view. If you run out of space, just open another scope view and add more. You can also use math channels to reveal new details in complex signals, for example graphing the changing duty cycle or frequency of your signal over time.





Custom probes in PicoScope oscilloscope software

The custom probes feature allows you to correct for gain, attenuation, offsets and nonlinearities in probes, sensors or transducers that you connect to the oscilloscope. This could be used to scale the output of a current probe so that it correctly displays amperes. A more advanced use would be to scale the output of a nonlinear temperature sensor using the table lookup function.

Definitions for standard Pico-supplied oscilloscope probes and current clamps are included. User-created probes may be saved for later use.

Ultra-high-definition display

PicoScope PC-based instruments use the host computer's display, which is typically larger and of higher resolution than the dedicated displays installed in traditional benchtop oscilloscopes. This allows room for simultaneous display of time- and frequency-domain waveforms, decoded serial bus tables, measurement results with statistics and more.

PicoScope software scales automatically to take full advantage of the improved resolution of larger display sizes, including 4K ultra-high definition models. At 3840 x 2160 resolution—over eight million pixels—PicoScope allows engineers to get more done in less time through split-screen views of multiple channels (or different views of the same channel) from the device under test. As the example shows, the software can even show multiple oscilloscope and spectrum analyzer traces at once.

Large, high-resolution displays really come into their own when viewing high-resolution signals with the PicoScope 3000E Series. With a 4K monitor, PicoScope can display more than ten times the information of traditional scopes, solving the problem of how to match a big display and features with a small-footprint portable oscilloscope.

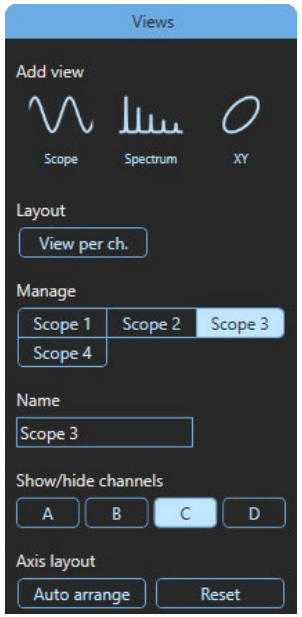
PicoScope also supports dual monitors: instrument control and waveforms displayed on the first, and large data sets from serial protocol decoders or DeepMeasure results on the second. The software can be controlled by mouse or touchscreen.

View per channel option

With view per channel, each channel has its own viewport using the the full resolution for each channel.

When multiple channels are active, select the **Views** menu and then **View per ch.**

Each channel plot will be displayed in its own view which can be re-arranged to suit your display preferences by dragging each **Scope** tab into your preferred position. You can tesselate each channel view into a grid, or display channels in rows or columns, or in combination.

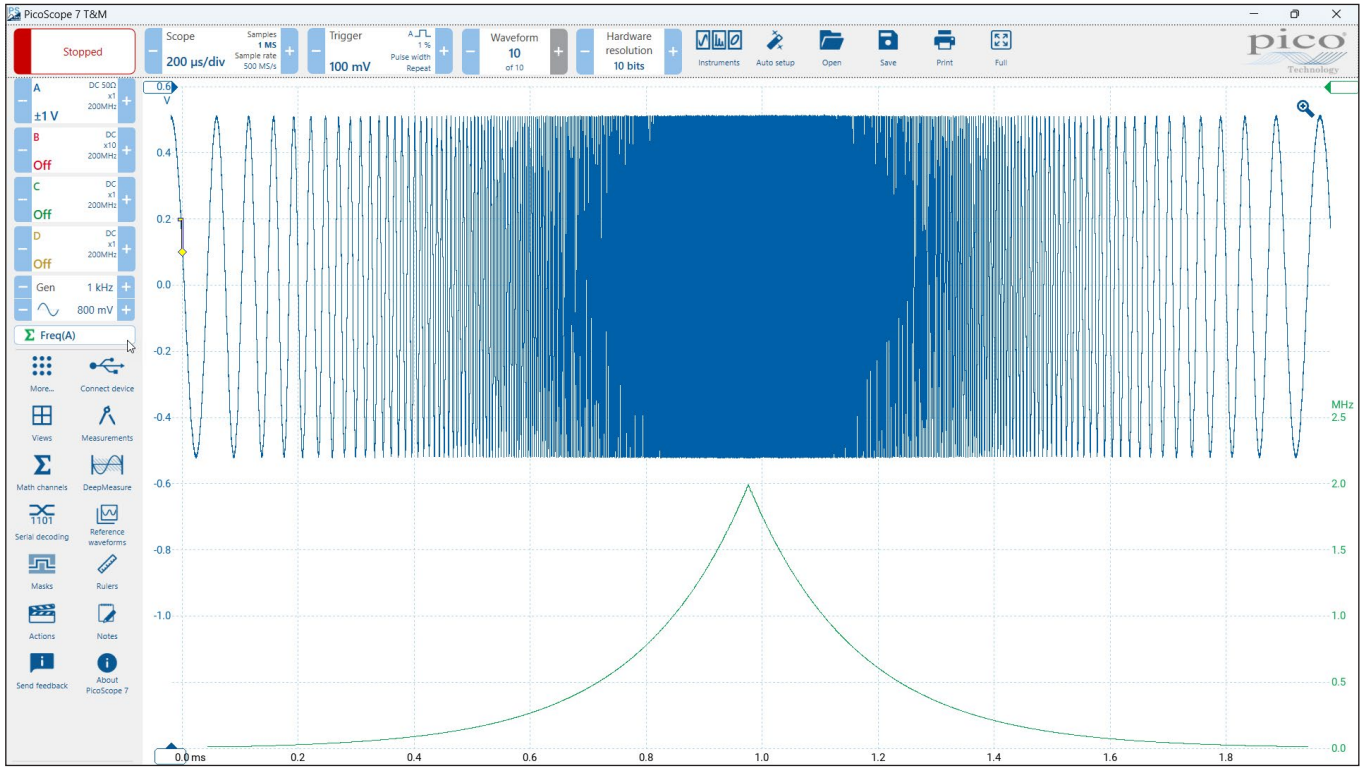


Powerful tools provide endless options

Your PicoScope is provided with many powerful tools to help you acquire and analyze waveforms. While these tools can be used on their own, the real power of PicoScope lies in the way they have been designed to work together.

As an example, the rapid trigger mode allows you to collect 40 000 waveforms in a few milliseconds with minimal dead time between them. Manually searching through these waveforms would be time-consuming, so just pick a waveform you are happy with and let the mask tools scan through for you. When done, the measurements will tell you how many have failed and the waveform navigator allows you to hide the good waveforms and just display the problem ones. Alternatively, add a measurement and set upper and lower limits, then filter within the waveform navigator to find and view only those waveforms that pass, or fail, your set limits.

The screenshot (right) shows a plot of the changing frequency of a signal on channel A versus time as a graph. Perhaps instead you want to plot changing duty cycle as a graph? How about outputting a waveform from the AWG and also automatically saving the waveform to disk when a trigger condition is met? With the power of PicoScope the possibilities are almost endless. To find out even more about the capabilities of PicoScope software, visit our online A to Z of PC Oscilloscopes.



High-end features as standard

Buying a PicoScope is not like making a purchase from other oscilloscope companies, where optional extras considerably increase the price. With our scopes, high-end features such as serial decoding, mask limit testing, advanced math channels, segmented memory, hardware-based time-stamping and a signal generator are all included in the price.

To protect your investment, both the PC software and firmware inside the scope can be updated. Pico Technology has a long history of providing new features for free through software downloads. We deliver on our promises of future enhancements year after year. Users of our products reward us by becoming lifelong customers and frequently recommending us to their colleagues.

PicoScope 7 software - time domain view

Running/Stopped control: Click to start displaying waveforms. Click again to stop. The keyboard space bar has the same function.

Timebase sampling controls: Set the timing of an acquisition using the seconds/division control. **Sampling** controls provide a choice of timebase operating modes: **Buffer memory** priority adjusts the sampling rate to maintain a fixed capture memory depth. **Sample rate** priority adjusts memory depth to maintain a fixed sampling rate.

Trigger controls: Quick access to main controls and advanced triggers.

Waveform buffer navigator: PicoScope can store the last 40 000 oscilloscope or spectrum waveforms in a circular waveform buffer. The buffer navigator provides an efficient way of navigating and searching through waveforms.

Channel controls: Each channel corresponds to one of the PicoScope input connectors. Use controls to manage probe types, assign channel names, set vertical scaling, offset, input coupling and other signal conditioning parameters before making measurements on the DUT.

Bandwidth (BW) limit: Available BW-limit options depend on the selected voltage range and resolution. Auto mode selects the highest available BW based on your set-up. The BW limit in use is shown in each channel control.

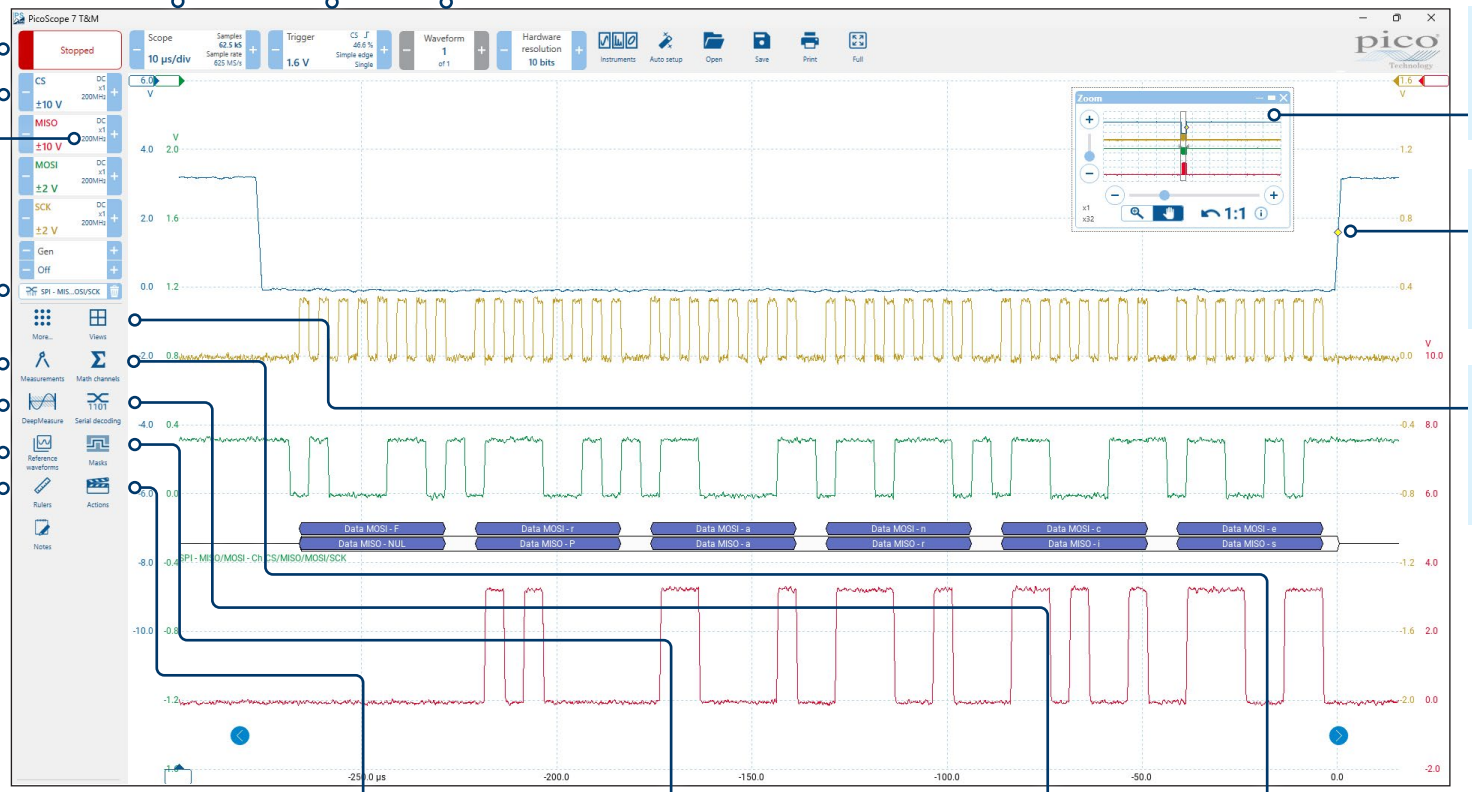
Serial protocol decoding: Serial decoders in use are listed here.

Automatic measurements: Display calculated measurements for troubleshooting and analysis. You can add as many measurements as you need on each view. Each measurement includes statistical parameters showing its variability.

DeepMeasure: Delivers automatic measurement of important waveform parameters on up to a million waveform cycles on each triggered acquisition.

Reference waveforms: Waveforms can be saved and displayed for comparison with live data.

Rulers: Help to make on-screen waveform measurements without having to count graticule marks.



Zoom: Zoom-in to magnify and click or drag to pan around.

Trigger marker: Shows the channel, signal level and time of the trigger event. Drag to adjust.

Views: Display separate scope, spectrum or XY views which can also be moved to different screens.

Actions: These are things that the PicoScope can be programmed to do when certain events occur. Actions include: **Stop capture**, **Save waveform**, **Play sound**, **Trigger signal generator**, **Run application.**

Masks: Mask limit testing allows the comparison of live signals against known good signals and is designed for production and debugging environments. Simply capture a known good signal, generate a mask around it and then monitor the device under test.

Serial decoding: PicoScope has 40 built-in serial protocol decoders which are included as standard at no extra cost.

Math channels: Advanced scientific, trigonometric, buffer, filter and coupler functions as well as basic arithmetic.

PicoScope 7 software - frequency domain (spectrum analyzer) view

Spectrum controls: Set the frequency range, window functions (**Blackman**, **Gaussian**, **Triangular**, **Hamming**, **Hann**, **Blackman-Harris**, **Flat-top** or **Rectangular**), number of bins (bin width and collection time are calculated and displayed) and XY axis settings.

Trigger controls: The full advanced trigger capabilities of the scope are available in spectrum mode, to capture the frequency spectrum of a single event.

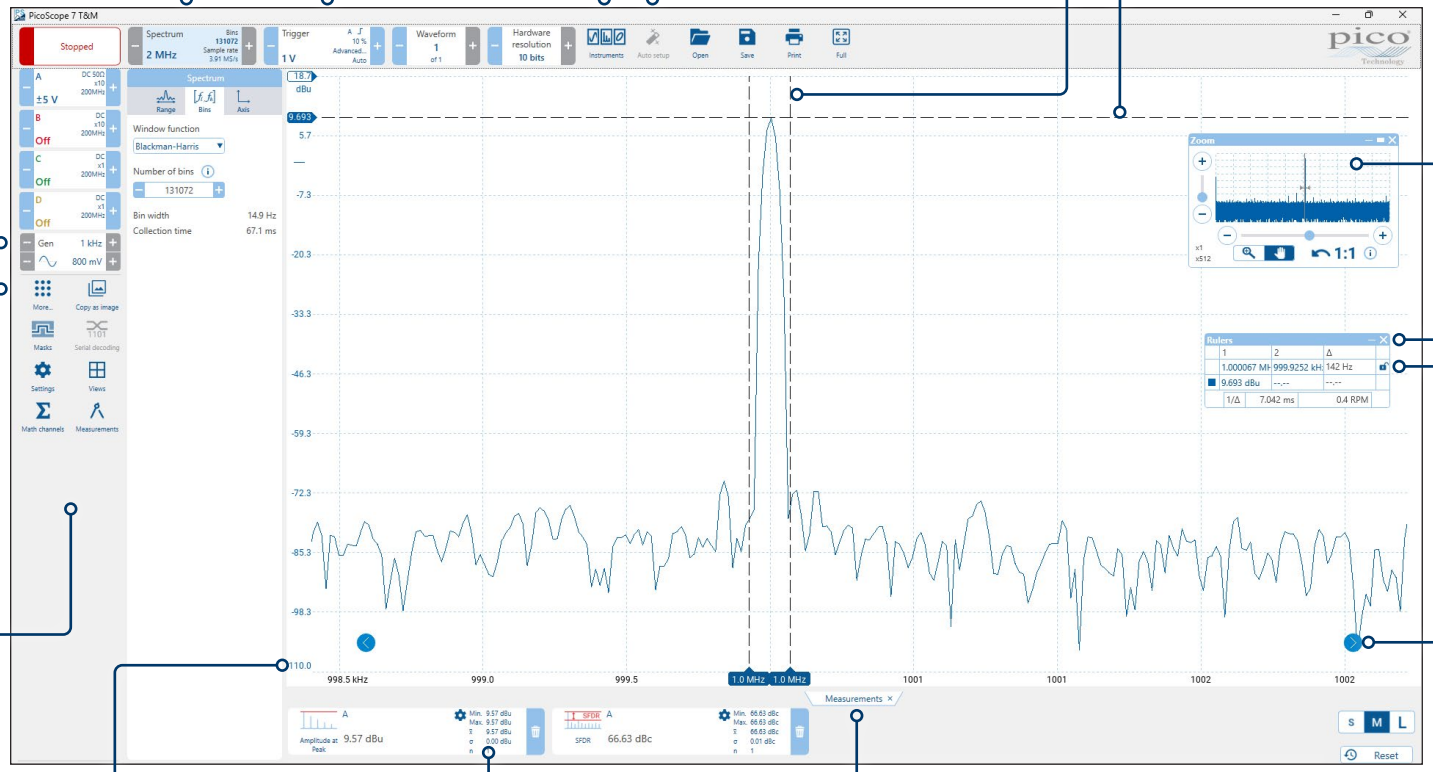
Instruments: Switches between the following modes: scope, spectrum, XY and persistence.

Auto setup: Click this first to find your signal, then adjust using the other controls.

Frequency rulers: Drag ruler from left to right to mark a point on the axis. The ruler legend displays the frequency at each ruler and the difference between them.

dB/voltage rulers: Drag up or down to mark a point on the axis. The ruler legend will display the decibel/voltage value at each ruler and the difference between them.

Signal generator: For oscilloscopes with a built-in arbitrary waveform generator (AWG). Generates standard signals or arbitrary waveforms. Includes frequency sweep mode.



Zoom window: Shows the full waveforms on all active channels. The grey rectangle indicates the area that is visible in the current view.

More: Click to display all available tools to select and favorite for quick access.

Ruler legend: Displays the positions of all the rulers you have placed on the view. It appears automatically whenever you position a ruler on the view.

Lock rulers: When two rulers have been positioned on one channel, the unlocked padlock button appears next to that ruler in the legend. Clicking this button locks the two rulers together so they track each other: dragging one causes the other to follow it, maintaining a fixed separation. The button changes to a "locked padlock" when the rulers are locked.

Favorited tools or functions such as **Measurements**, **Math channels**, **Serial protocol decoding**, **Rulers**, **Reference waveforms**, **Masks** and **Actions** are one touch away in a custom UI panel.

Navigate waveform: When zoomed-in, click to pan up or down the frequency range.

Channel axis: Each channel has a color-coded axis. Drag it up or down to position the channel.

Measurement statistics: The minimum, maximum, average and standard deviation of each measurement are calculated and displayed.

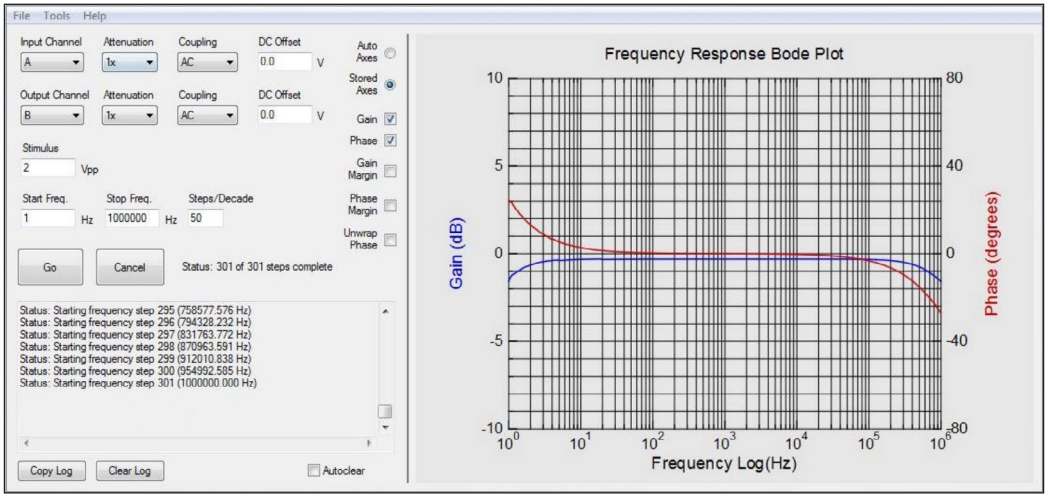
Measurements window: Dynamically updated automatic measurements. Choose from a rich set of time-domain and frequency-domain measurement types. The measurements window can be un-docked from the main display, and even moved to another monitor.

PicoSDK - write your own apps

Our free software development kit, PicoSDK, allows you to write your own software and includes drivers for Windows, macOS and Linux. Example code supplied on our GitHub organization page shows how to interface to third-party software packages such as National Instruments LabVIEW and MathWorks MATLAB, as well as programming languages including C/C++, C# and Python.

Among other features, the drivers support data streaming, a mode that captures continuous gap-free data directly to your PC or host computer at rates of over 300 MS/s, so you are not limited by the size of your scope's capture memory. Sampling rates in streaming mode are subject to PC specifications and application loading.

There is also an active community of PicoScope users who share both code and whole applications on our Test and Measurement Forum and the PicoApps section of the website. The Frequency Response Analyzer shown here is a popular application on the forum.




```
ScopeSettingsPropTree.clear();
    wstring appVersionStringW = wstring_convert<codecvt_utf8<wchar_t>>().from_bytes(appVersionString);
    ScopeSettingsPropTree.put( L"appVersion", appVersionStringW );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.name", L"A" );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.attenuation", ATTEN_1X );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.coupling",PS_AC );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.dcOffset", L"0.0" );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.startingRange", -1 ); // Base on stimulus
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.name", L"B" );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.attenuation", ATTEN_1X );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.coupling", PS_AC );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.dcOffset", L"0.0" );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.startingRange", pScope->GetMinRange(PS_AC) );

    midSigGenVpp = floor((pScope->GetMinFuncGenVpp() + pScope->GetMaxFuncGenVpp()) / 2.0);

    stimulusVppSS << fixed << setprecision(1) << midSigGenVpp;
    maxStimulusVppSS << fixed << setprecision(1) << pScope->GetMaxFuncGenVpp();
    startFreqSS << fixed << setprecision(1) << (max(1.0, pScope->GetMinFuncGenFreq())); // Make frequency at least 1.0 since 0.0 (DC) makes no sense for FRA
    stopFreqSS << fixed << setprecision(1) << (pScope->GetMaxFuncGenFreq());
```

PicoLog 6 software

PicoScope 3000E Series oscilloscopes are also supported by the PicoLog 6 data logging software, allowing you to view and record signals on multiple units in one capture.

PicoLog 6 allows sample rates of up to 1 kS/s per channel, and is ideal for long-term observation of general parameters, such as voltage or current levels, on several channels at the same time, whereas the PicoScope software is more suitable for waveshape or harmonic analysis.

You can also use PicoLog 6 to view data from your oscilloscope alongside a data logger or other device. For example, you could measure voltage and current with your PicoScope and plot both against temperature using a TC-08 thermocouple data logger.

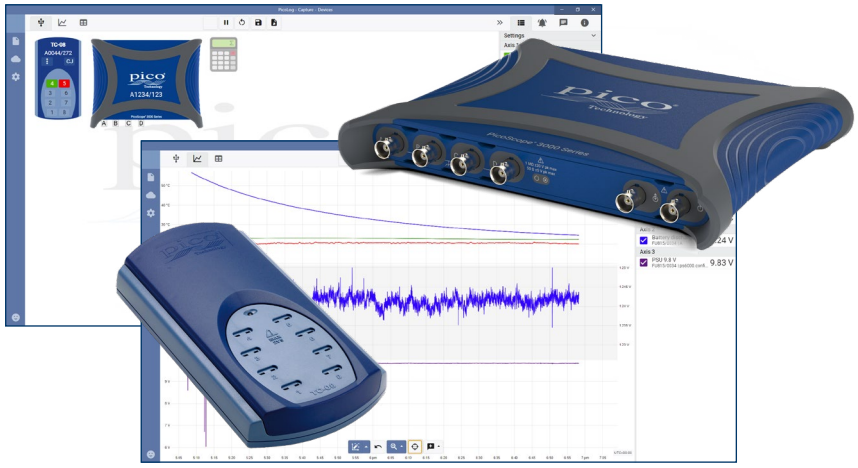
PicoLog Cloud

Your PicoScope or data logger can capture to a local disk and stream the capture directly to a secure online Cloud store, which is completely free.

This feature stays true to our vision of creating a data logging application with a simple user interface, and is equally straightforward for use by technical or non-technical users.

PicoLog Cloud (built-in to PicoLog 6) provides enhancements to send the live capture data directly to your remote PicoLog Cloud space, and in addition view saved captures stored in the Cloud.

PicoLog 6 is available for Windows, macOS, Linux and Raspberry Pi OS.



PicoLog Cloud®

Carry your electronics lab with you

Traditional benchtop oscilloscopes take up a lot of bench space.

PicoScope 3000E Series oscilloscopes are small and portable while offering the high-performance specifications required by engineers in the lab or on the move, and deliver lowest cost of ownership for this class of instrument.

PicoScope software is included in the price of your scope, available for free download, with free updates and can be installed on as many PCs as you want, allowing you to view/analyze data off-line without the scope.

Need to travel, and even take your scope on a plane?
No problem! It fits easily in your hand luggage or laptop case.

PicoScope 3000E Series specifications

PicoScope model:		3417E	3418E
Vertical (analog channels)			
Input channels		4	
Bandwidth (–3 dB)		350 MHz	500 MHz
Rise time (10% to 90%, –2 dB full scale)		1.2 ns	925 ps
Selectable bandwidth limits	8-bit mode	20, 50, 100, 200, 350 MHz	20, 50, 100, 200, 350, 500 MHz
	10-bit mode	20, 50, 100, 200 MHz	
Vertical resolution		8 bits, 10 bits	
Enhanced vertical resolution (software)		Hardware resolution + 4 bits	
Input connector		BNC(f)	
Input characteristics	50 Ω	50 Ω ±2 %	
	1 MΩ	1 MΩ ±1 % ‖ 13 pF ±2 pF	
Input coupling	50 Ω	DC	
	1 MΩ	AC/DC	
Input sensitivity	50 Ω	1 mV/div to 1 V/div (10 vertical divisions)	
	1 MΩ	1 mV/div to 4 V/div (10 vertical divisions)	
Input ranges (full scale)	50 Ω	±5 mV[1], ±10 mV[2], ±20 mV[3], ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V	
	1 MΩ	±5 mV[1], ±10 mV[2], ±20 mV[3], ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V	
[1] ±5 mV only available up to 100 MHz [2] ±10 mV only available up to 200 MHz [3] ±20 mV only available up to 350 MHz			
DC gain accuracy		±(1% of signal + 1 LSB)	
DC offset accuracy		±(2% of full scale + 200 µV)	
		Offset accuracy can be improved by using the “zero offset” function in PicoScope.	
LSB size (quantization step size)	8-bit mode	< 0.4% of input range	
	10-bit mode	< 0.1% of input range	
Analog offset range (vertical position adjustment)		±250 mV (±5 mV to ±200 mV ranges) ±2.5 V (±500 mV to ±2 V ranges) ±5 V (±5 V range, 50 Ω input) ±20 V (±5 V to ±20 V ranges, 1 MΩ input)	
Analog offset control accuracy		±1% of offset setting, additional to DC accuracy above	
Overvoltage protection	1 MΩ	±100 V (DC + AC peak) up to 10 kHz	
	50 Ω	5.5 V RMS max, ±20 V pk max	
Horizontal			
Maximum sampling rate (real time, 8-bit mode)		5 GS/s on 1 channel 2.5 GS/s on 2 channels 1.25 GS/s on 3 to 4 channels	
Maximum sampling rate (real time, 10-bit mode)		2.5 GS/s on 1 channel 1.25 GS/s on 2 channels 625 MS/s on 3 to 4 channels	

PicoScope model:		3417E	3418E
Max. sampling rate, USB 3.0 streaming mode[4]	PicoScope 7	~50 MS/s	
	PicoSDK	~300 MS/s (8-bit mode) ~150 MS/s (10-bit mode)	
Max. sampling rate, USB 2.0 streaming mode[4]	PicoScope 7	~10 MS/s	
	PicoSDK	~30 MS/s (8-bit mode) ~15 MS/s (10-bit mode)	
[4] Split between active channels, PC dependent			
Capture memory[5]		2 GS (8-bit mode) 1 GS (10-bit mode)	
[5] Split between active channels			
Maximum single capture duration at maximum sampling rate	PicoScope 7	200 ms	
	PicoSDK	400 ms	
Capture memory (continuous streaming)	PicoScope 7	250 MS	
	PicoSDK	Buffering using full device memory, no limit on total duration of capture	
Waveform buffer (number of segments)	PicoScope 7	40 000	
	PicoSDK	2 000 000	
Timebase ranges		1 ns/div to 5000 s/div	
Initial timebase accuracy		±5 ppm	
Timebase drift		±1 ppm/year	
ADC sampling		Simultaneous sampling on all active channels	
Dynamic performance (typical)			
Crosstalk		Better than 500:1 (from DC to bandwidth of victim channel, equal voltage ranges)	
Harmonic distortion (10 MHz, −2 dBfs input)	8-bit	Better than −50 dB on ±50 mV to ±20 V ranges	
	10-bit	Better than −60 dB on ±50 mV to ±20 V ranges	
SFDR (10 MHz, −2 dBfs input)	8-bit	Better than 50 dB on ±50 mV to ±20 V ranges	
	10-bit	Better than 60 dB on ±50 mV to ±20 V ranges	

PicoScope model:		3417E	3418E

RMS noise

Range	/Div	Bandwidth filter					
		20 MHz 10-bit	50 MHz 10-bit	100 MHz 10-bit	200 MHz 10-bit	350 MHz 8-bit	500 MHz 8-bit
±5 mV	1 mV	0.023 mV	0.036 mV	0.051 mV	0.080 mV	0.10 mV	0.11 mV
±10 mV	2 mV	0.023 mV	0.036 mV	0.051 mV	0.083 mV	0.11 mV	0.12 mV
±20 mV	4 mV	0.024 mV	0.036 mV	0.052 mV	0.10 mV	0.15 mV	0.17 mV
±50 mV	10 mV	0.049 mV	0.052 mV	0.071 mV	0.13 mV	0.27 mV	0.33 mV
±100 mV	20 mV	0.098 mV	0.098 mV	0.098 mV	0.20 mV	0.46 mV	0.63 mV
±200 mV	40 mV	0.20 mV	0.20 mV	0.20 mV	0.37 mV	0.91 mV	1.30 mV
±500 mV	100 mV	0.49 mV	0.54 mV	0.72 mV	1.30 mV	2.30 mV	3.40 mV
±1 V	200 mV	0.98 mV	0.98 mV	0.98 mV	2.0 mV	4.10 mV	6.30 mV
±2 V	400 mV	2.0 mV	2.0 mV	2.0 mV	3.70 mV	8.10 mV	12 mV
±5 V	1 V	4.9 mV	5.5 mV	7.6 mV	14 mV	23 mV	34 mV
±10 V	2 V	9.8 mV	9.8 mV	9.8 mV	22 mV	41 mV	63 mV
±20 V	4 V	20 mV	20 mV	20 mV	41 mV	81 mV	125 mV

Linearity		≤ 2 LSB 8-bit mode ≤ 4 LSB 10-bit mode
Bandwidth flatness		(+0.5 dB, –3 dB) from DC to full bandwidth
Low frequency flatness		< ±6% (or ±0.5 dB) from DC to 1 MHz
Triggering		
Source		Any analog channel, AUX I/O trigger
Trigger modes		None, auto, repeat, single, rapid (segmented memory)
Advanced trigger types (analog channels)		Edge (rising, falling, rising-or-falling), window (entering, exiting, entering-or-exiting), pulse width (positive or negative or either pulse), window pulse width (time inside, outside window or either), level dropout (including high/low or either), window dropout (including inside, outside or either), interval, runt (positive or negative), transition time (rise/fall), logic Logic trigger capabilities: AND/OR/NAND/NOR/XOR/XNOR function of any trigger sources (analog channels and aux input) User-defined Boolean function of any combination of analog channels plus aux input (PicoSDK only)
Trigger sensitivity (analog channels)		Digital triggering provides 1 LSB accuracy up to full bandwidth of scope with adjustable hysteresis
Pre-trigger capture		Up to 100% of capture size
Post-trigger delay	**PicoScope 7**	Zero to > 4×10^9 samples, settable in 1 sample steps (delay range at 5 GS/s of 0.8 s in 200 ps steps)
	PicoSDK	Zero to > 1×10^{12} samples, settable in 1 sample steps (delay range at 5 GS/s of > 200 s in 200 ps steps)
Trigger holdoff by time		Delay re-arming the trigger after each trigger event by a user-set time up to 4×10^9 sample intervals.
Rapid trigger mode rearm time		< 700 ns on fastest timebase
Maximum trigger rate	**PicoScope 7**	40 000 waveforms in 20 ms
	PicoSDK	Number of waveforms up to memory segment count, at a rate of 2 million waveforms per second.
Waveform update rate		Up to 300 000 waveforms per second in PicoScope 7 fast persistence mode
Trigger time-stamping		Each waveform is timestamped with time from previous waveform, with sample-interval resolution.

PicoScope model:	3417E	3418E
Auxiliary trigger		
Trigger types (triggering scope)	Edge, pulse width, dropout, interval, logic	
Trigger types (triggering AWG)	Rising edge, falling edge, gate high, gate low	
Input bandwidth	> 10 MHz	
Input characteristics	3.3 V CMOS Hi-Z input, DC coupled	
Input threshold	Fixed threshold, low < 1 V, high > 2.3 V suitable for 3.3 V CMOS	
Input hysteresis	1.3 V max (V_{IH} < 2.3 V, V_{IL} > 1 V)	
Auxiliary output function	Trigger output	
Output voltage	3.3 V CMOS (V_{OH} > 3.2 V, V_{OL} < 0.1 V into Hi-Z)	
Output impedance	Approx. 270 Ω	
Output rise time	Measured directly at BNC: < 15 ns	
Coupling	DC	
Overvoltage protection	±20 V peak max	
Connector type	BNC(f)	
Function generator		
Standard output signals	Sine, square, triangle, DC voltage, ramp up, ramp down, sinc, Gaussian, half-sine	
Output frequency range	100 µHz to 20 MHz	
Output frequency accuracy	Oscilloscope timebase accuracy ± output frequency resolution	
Output frequency resolution	< 1 µHz	
Sweep modes	Up, down, dual with selectable start/stop frequencies and increments	
Triggering	Free-run, or from 1 to 1 billion counted waveform cycles or frequency sweeps. Triggered from scope trigger, aux trigger or manually.	
Gating	Waveform output can be gated (paused) via aux trigger input or software	
Pseudorandom output signals	White noise, selectable amplitude and offset within output voltage range Pseudorandom binary sequence (PRBS), selectable high and low levels within output voltage range, selectable bit rate up to 20 Mb/s	
Output voltage range	±2.0 V into Hi-Z (±1.0 V into 50 Ω)	
Output voltage adjustment	Signal amplitude and offset adjustable in approx. 0.3 mV steps within overall ± 2 V range	
DC accuracy	±1 % of full scale, into Hi-Z load	
Amplitude flatness	< 1.5 dB to 20 MHz, typical, sine wave into 50 Ω	
SFDR	> 70 dB, 10 kHz full scale sine wave	
Output resistance	50 Ω ±1%	
Overvoltage protection	±20 V peak max	
Connector type	BNC(f)	
Arbitrary waveform generator		
Update rate	200 MS/s	
Buffer size	32 kS	
Vertical resolution	14 bits (output step size 0.3 mV)	
Bandwidth (−3 dB)	> 20 MHz	
Rise time (10% to 90%)	< 10 ns (50 Ω load)	
Sweep modes, triggering, frequency accuracy and resolution, voltage range and accuracy and output characteristics as for function generator.		
Spectrum analyzer		
Frequency range	DC to 350 MHz	DC to 500 MHz
Display modes	Magnitude, average, peak hold	
Y axis	Logarithmic (dBV, dBu, dBm, arbitrary dB) or linear (volts)	

PicoScope model:	3417E	3418E
X axis	Linear or logarithmic	
Windowing functions	Rectangular, Gaussian, triangular, Blackman, Blackman–Harris, Hamming, Hann, flat-top	
Number of FFT points	Selectable from 128 to 1 million in powers of 2	
Math channels		
Functions	–x, x+y, x–y, x*y, x/y, x^y, sqrt, exp, ln, log, abs, norm, sign, sin, cos, tan, arcsin, arccos, arctan, sinh, cosh, tanh, delay, average, frequency, derivative, integral, min, max, peak, duty, highpass, lowpass, bandpass, bandstop, coupler, top, base, amplitude, positive overshoot, negative overshoot, phase, delay, moving, deskew, true power, apparent power, reactive power, power factor	
Operands	A to D (input channels), T (time), reference waveforms, pi, constants	
Automatic measurements		
Scope mode	AC RMS, amplitude, apparent power, base, cycle time, DC average, duty cycle, edge count, fall time, falling edge count, falling rate, frequency, high pulse width, low pulse width, maximum, minimum, negative duty cycle, negative overshoot, peak to peak, phase, positive overshoot, power factor, reactive power, rise time, rising edge count, rising rate, top, true power, true RMS	
Spectrum mode	Frequency at peak, amplitude at peak, average amplitude at peak, total power, THD%, THD dB, THD+N, SINAD, SNR, IMD	
Statistics	Minimum, maximum, average, standard deviation	
DeepMeasure		
Parameters	Cycle number, cycle time, frequency, low pulse width, high pulse width, duty cycle (high), duty cycle (low), rise time, fall time, undershoot, overshoot, max. voltage, min. voltage, voltage peak to peak, start time, end time	
Serial decoding		
Protocols	1-Wire, 10BASE-T1S, ARINC 429, BroadRReach, CAN, CAN FD, CAN J1939, CAN XL, DALI, DCC, Differential Manchester, DMX512, Ethernet 10BASE-T, Extended UART, Fast Ethernet 100BASE-TX, FlexRay, I2C, I2S, I3C BASIC v1.0, LIN, Manchester, MIL-STD-1553, MODBUS ASCII, MODBUS RTU, NMEA-0183, Parallel Bus, PMBus, PS/2, PSI5 (Sensor), Quadrature, RS232/UART, SBS Data, SENT Fast, SENT Slow, SENT SPC, SMBus, SPI-MISO/MOSI, SPI-SDIO, USB (1.0/1.1), Wind Sensor	
Mask limit testing		
Statistics	Pass/fail, failure count, total count	
Mask creation	Auto-generated from waveform or imported from file	
Display		
Display modes	Scope, XY scope, persistence, spectrum.	
Interpolation	Linear or sin(x)/x	
Persistence modes	Time, frequency, fast	
Output file formats	csv, mat, pdf, png, psdata, pssettings, txt	
Output functions	Copy to clipboard, print	
Data transfer		
Captured waveform data USB transfer rate to PC	On USB 3.0, PC dependent: 8-bit mode: up to 360 MS/s; 10-bit mode: up to 180 MS/s On USB 2.0, PC dependent: 8-bit mode: up to 40 MS/s; 10-bit mode: up to 20 MS/s	
Hardware accelerated waveform display rate	Hardware acceleration enables over 2 GS of data to be displayed on screen per second (8-bit mode, 4 channels, 250 MS per channel at max sample rate)	
General specifications		
PC connectivity	USB 3.0 SuperSpeed (USB 2.0 compatible)	
PC connector type	USB 3.0 Type-C	
Power requirement	Powered from single USB Type-C 3 A port or from USB port plus external Type-C PSU (5V 3A)	
Status indicators	RGB LED per BNC connector plus power and sampling	
Thermal management	Automatic fan speed control for low noise	
Dimensions	221 x 173 x 30 mm	
Weight	< 0.7 kg	

PicoScope model:		3417E	3418E
Ambient temperature range	Operating	0 to 40 °C	
	For quoted accuracy	15 to 30 °C after 20-minute warm-up	
	Storage	–20 to +60 °C	
Humidity range	Operating	5 to 80 %RH non-condensing	
	Storage	5 to 95 %RH non-condensing	
Altitude		Up to 2000 m	
Pollution degree		EN 61010 pollution degree 2: “only nonconductive pollution occurs except that occasionally a temporary conductivity caused by condensation is expected”	
Safety compliance		Designed to EN 61010-1:2010 + A1:2019	
EMC compliance		Tested to EN 61326-1:2021 and FCC Part 15 Subpart B	
Environmental compliance		RoHS, REACH & WEEE	
Warranty		5 years	
Software			
Windows software (64-bit)[6]		PicoScope 7, PicoLog 6, PicoSDK (Users writing their own apps can find example programs for all platforms on the Pico Technology organization page on GitHub).	
macOS software (64-bit)[6]		PicoScope 7, PicoLog 6 and PicoSDK	
Linux software (64-bit)[6]		PicoScope 7 software and drivers, PicoLog 6 (including drivers) See Linux Software and Drivers to install drivers only	
Raspberry Pi 4B and 5[6] (Raspberry Pi OS)		PicoLog 6 (including drivers) See Linux Software and Drivers to install drivers only	
[6] See the picotech.com/downloads page for more information.			
Languages supported	PicoScope 7	English-US, English-UK, Bulgarian, Czech, Danish, German, Greek, Spanish, French, Korean, Croatian, Italian, Hungarian, Netherlands Dutch, Japanese, Norwegian, Polish, Portuguese-Brazil, Portuguese, Romanian, Russian, Slovene, Serbian, Finnish, Swedish, Turkish, Simplified Chinese, Traditional Chinese	
	PicoLog 6	Simplified Chinese, Dutch, English (UK), English (US), French, German, Italian, Japanese, Korean, Russian, Spanish	
PC requirements		Processor, memory and disk space: as required by the operating system Ports: USB 3.0 (recommended) or 2.0 (compatible)	

PicoScope 3000E Series oscilloscope kit contents:

- PicoScope 3000E Series oscilloscope
- TA532 USB-C to USB-C cable, 1.8 m
- TA534 USB-A to USB-C cable, 0.9 m
- PS017 USB-C power supply, with UK, EU, US and AUS plugtops
- User's Guide

OEM and non-standard product configurations may be available without probes and/or other items.

Please see www.picotech.com/tech-support

Probes and additional items as shown below are also supplied in each kit:

Model	Bandwidth	Channels	Probes (1.2 m lead length)	BNC adaptor
PicoScope 3417E	350 MHz	4	4 x TA536, 350 MHz, 1:1/10:1 probes	1 x TA537 5 mm probe to BNC adaptor
PicoScope 3418E	500 MHz	4	4 x P1053, 500 MHz, 10:1 probes	1 x TA563 3.5 mm probe to BNC adaptor

PicoScope 3000E Series kit ordering information:

Order code	Description	Bandwidth	Channels	Resolution (bits)	Memory (GS)
PQ347	PicoScope 3417E kit	350 MHz	4	8 to 10	2 GS (8-bit mode) 1 GS (10-bit mode)
PQ349	PicoScope 3418E kit	500 MHz			

PicoScope 3417E (PQ347)

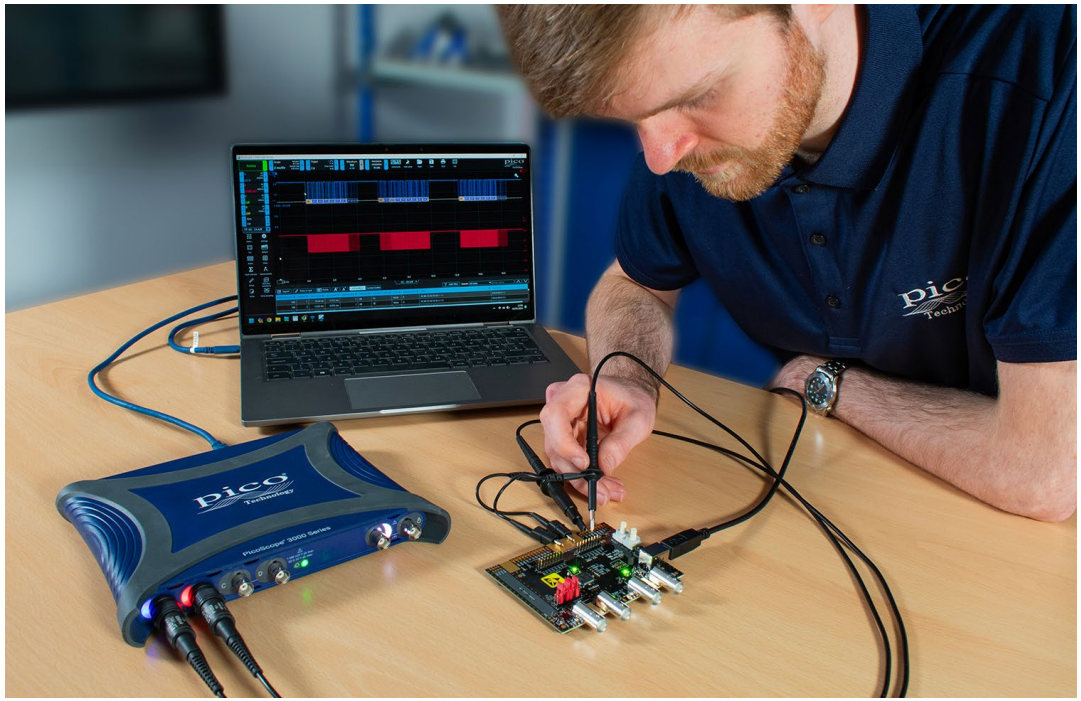
PicoScope 3418E (PQ349)

Calibration service:

Order code	Description
CC017	Calibration certificate for PicoScope 3000E Series oscilloscopes (350 and 500 MHz)

Optional compatible accessories and replacement items:

Order code	Description
Oscilloscope probes	
TA536	350 MHz probe (single pack)
TA562	500 MHz probe (dual pack)
Cables	
TA532	USB Type-C to USB Type-C cable, 1.8 m
TA534	USB Type-A to USB Type-C cable, 0.9 m
Adaptor	
TA537	BNC adaptor for the TA536 oscilloscope probe
TA563	BNC adaptor for the TA562 oscilloscope probe
Power supply	
PS017	5 V, 3 A, UK/EU/US/AUS, USB-C power supply



Total cost of ownership (TCO), environmental benefits and portability

Total cost of ownership of a PicoScope 3000E oscilloscope is lower than traditional benchtop instruments for several reasons:

- Everything is included in the purchase price: serial protocol decoders, math channels and mask limit testing. No expensive optional upgrades or annual license fees.
- Free updates: new features and capabilities are provided throughout the lifetime of the product as we develop and release them.
- The PicoScope 3000E Series are highly portable and are very suited to home-working where desk space might be limited.
- Low power consumption — less than 15 W — saves money and is kinder to the environment.
- 5-year warranty.

More instruments from Pico Technology...

PicoLog TC-08 temperature data logger
8-channel, 20-bit resolution, measures from −270 °C to +1820 °C

PicoScope 9400 SXRTO
Sampler-extended real-time oscilloscopes 5 to 16 GHz

PicoVNA
Low-cost, professional-grade 6 GHz and 8.5 GHz vector network analyzers for both lab and field use

PicoScope 6000 Series
Up to 8 channels, Ultra-deep 4 GS memory buffer, Gigabit MSO channels

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